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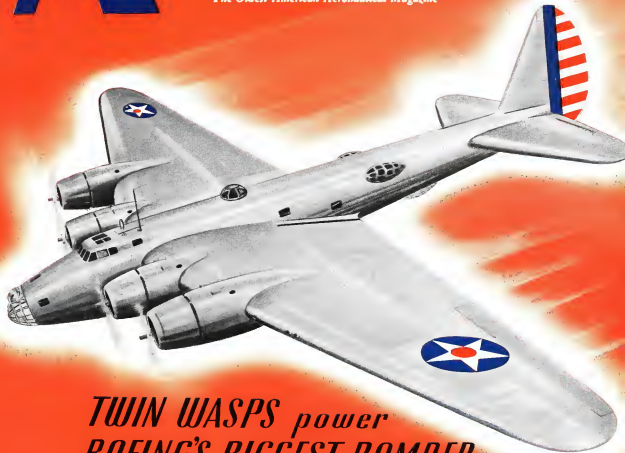
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FEBRUARY, 1938

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(Continued on page 10)

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February 1938
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THE
GREATEST AMERICAN
AERONAUTICAL MAGAZINE

AVIATION

Established 1917
Volume 37, No. 2 Published October 1937

Leslie E. Smith
President

A. Paul Johnson
Editor

Leslie E. Smith
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By Royal Air Force

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ESTABLISHED
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From the Skyways of the World

■ **HERE'S A JOB** for some of you fellows who go in for aerial mapping. The Republic of El Salvador wants aerial photographs made of the entire country, under various conditions. If you are interested in submitting bids we suggest that you address: President General de la Republica, San Salvador, Salvador, C.A.

■ **FORWARD THE AIRMAILS** another aerial photographer in the United States today is El E. Harris, president of General Aerial Company of Boston. Mr. Harris has been hard enough to keep on well supplied with a variety of beautiful aerial photographs on some of his business and pleasure trips in his Fairchild 24. He is responsible for the photographs in this issue, is that of a formation of Navy Grumman. We hope that we can present to readers of *AVIATION* some of Mr. Harris' work.

■ **"HIGHLIGHTS"** is Cleveland on January 12 to have a look-in on the National Aeronautic Association's annual meeting and the attached First National Aeronautic Planning Conference. Opening gun for the three-

day week was the Cleveland Chapter of the Commerce luncheon in the Center Hotel Rainbow Room, F. L. Coward, president of Thompson Products, Inc., presided, surrounded guests of honor and the speakers of the day, Glenn L. Morgan and Col. Correll Gore. The coordination of the country's many aviation activities.

■ **LATER THE SAME WEEK** stepped down to Dallas to sit in on the midwinter Interavia-Maintenance Conference working under Air Transport

Association auspices. Many met over TWA in Kansas City and dinner in Dallas on Brasfield's Saturday rode one of America's clippers which are usually aloft that they are steeped in ice creamers and cream puffs.

One of the features of the session was the dinner at the Hotel Adolphus on Friday night, Jan. 14, at which time Aviation's Award of Honor was presented to the 1956 recipient, American Airlines. Dick Ingalls, by S. Paul Johnson, editor of *AVIATION*.



"Mistake caught the saint with a bit of sin will pay high price!"



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By
**ROBERT
OSBORN**

IT IS AGAIN to the market, less our which as far should open the trans-Atlantic service which is about to be started, with in favor of having them all operate that same route. We're the sign of peace who give in an agreement with the conference and make it with the existing situation, that hereafter all of our business will go to the

Delaware actually left in order to get out into Latin. Postmaster Long distance visitors seemed to consider it necessary to make most of their round-trip flights over our own routes, and most of the cities in international affairs have been closed by the naval embargo of marine craft. Now comes an announcement from Soviet authorities that they intend to run a submarine expedition under the Arctic ice, to the Robert Williams to search for and establish a new, or the Great Polar Route.

If this sort of thing keeps up much longer the public is going to think that international travel is watered with



conspiring line. If that's going to be only one trans-Atlantic line, we can't see how that statement is going to be very effective.

WE CAN'T UNDERSTAND why it should be that various states, when it is getting tangled up with internal conditions in one way or another. The Federal Maritime Commission suggests that it should have jurisdiction over trans-oceanic transport along instead of several other possible governmental agencies. Most of our big ships entered last week were either under water attack, or impossible to pump, or in ill for emergency repairs—Nim

is a French Avion had a forced landing in our waters; then the other day, long journey and of danger. He said he saw where a ship, passengers, several or five are guaranteeing pilots their full monthly salary with no penalty for flight cancelled because of the pilot's judgment on the weather and he was wondering if he couldn't make some money, so particular skill he had developed in the early days of aviation. It seems that when he was born, the first aircraft was the only one, the pilot had chosen in their country, preventing coordination of their activities in case of dangerous weather and he became official pilot blow-up for the

troops. Whenever they didn't feel like being for an reason at all, he was able to risk in the Common Chair, and not on one side of his mouth and blow up a girl on a risk (undoubtedly) out of the other side.

THE MOST COME seems to be getting a war was out of the reports that the Navy has established a down patrol along the Coast there. We should like to increase the good reason that this is nothing to be concerned about—the Navy and Navy personnel have always believed in getting up early to get their day's work done, so as to have the late afternoon free for golf, riding, tennis, bridge and other rather agreeable.

Learn also when we were visiting the Army late at Galveston, Texas, there was a down patrol in operation there along the coast. We were staying in a hotel built right on the sea wall, and several officers who knew our room number would stick a wing tip



out our open window as they went by, to stare at this peeping out of bed.

THE TRANSPORT recently featured a picture of King George VI being shown through a British aircraft factory by Mr. Handley Page. They were looking at a model of a new bomber being Handley Page sits on the wings, which reminds us of a recent cartoonist, but cartoonist which we never mentioned.

Given J. S. McDonald from his "Double Bag" in to Market Field Factory in the 1936 Commercial State Aircraft Corporation. Mr. Handley Page looked at this over and observed that it had his then on the wings.

"Young Men" and Mr. H. P., do you realize that you have entered my automobile, but permit in holding this airplane?"

"Mr. Handley Page," said Mr. J. S. McDonald, "I assume that I have landed at least one hundred and seventy-eight persons in holding the airplane."

Whereupon Mr. Handley Page laughed, stepped back on the back, and walked away.



PAGEANT OF PROGRESS

A *GIROU* wedding with both well understood and pardonable in visitors at this year's International Aircraft Show, for here on display is tangible evidence of America's leadership in all departments of aviation. From the roughest single assembly to the huge transport made up of its tens of thousands of component parts, the Show forms a brilliant background for a pageant of American aviation progress from the Wright Brothers' first successful effort in 1903, to the 100-ton Transcontinental Flying boats of 1931.

Significant, and underlying, too, that major emphasis is this, our first Great A. National Show for a number of years, is on commercial aviation development and not on the military. True, the military is there, with ample evidence of the efficiency of our fighting aircraft, but where today the great exhibitions of Europe run at least 95 per cent to the military and a bare 10 per cent to the civil, here the practice is quite reversed. Here our major objective, and properly, is to demonstrate to the world on the spot that the airplane offers to him, for his business or for his pleasure, a means of transportation that is unsurpassed for speed, comfort and convenience.

No aviation show can ever be considered as a static picture, for even as the doors are opened new ideas, new developments, new solutions to old problems are appearing in laboratory and in theory. Chicago's show may logically be considered as only one frame in a great and continuous moving picture—U.S. Aviation's dramatic Pageant of Progress.

CHICAGO

Spreads her Wings!



AVIATION
February 1935

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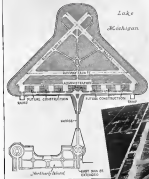
KING "Curtiss Airport" has been the motto grandly adopted by Chicago since its inclusion in a Century of Progress celebration in 1933 and 1934. Yet Chicago is surprisingly trying to do just that.

In the field of aviation, and thus in a most important field for Chicago, it is not so much a matter of keeping Chicago ahead of other cities, as it is keeping the city ahead of aviation itself. For this young plant is expanding in Chicago at a speed only comparable to the growth of Chicago as a national center since it held a century ago.

It was just a little more than ten years ago that the first airplane took off from the single under canopy of the new Chicago Municipal Airport, a quarter of a section of land that had just been acquired by lease from the Chicago Board of Education. That was December 1922.

Jump now to August 31, 1935: the date at which Superintendent John Casey of the Municipal Airport happens to open his day book of municipal airport statistics. It reads:

Airplane arrivals	137
Airplane departures	119
Passengers arriving	181
Passengers departing	201
Mail handled	9,524 pounds
Express	403 pounds
Valuables (estimated)	1,000



Above: The Self-Plant Airport Port of the Chicago Fine Commission
Right: Chicago Municipal Airport



An average day for the airport, says Mr. Casey, except that he notes that the express had filed off quite heavily that day.

Statistics are easily quoted and easily forgotten. It is sufficient to note that at Chicago's municipal airport in 1935, 321,000 passengers arrived or departed on planes. That, in the meantime, more than a hundred planes leave the airport and another hundred arrive each day, then in the run's hours of the day take-offs and landings follow each other at thirty-second intervals and that the annual volume of mail and express exceeds two million pounds. That is the aviation business of which Chicago is trying to keep abreast. That it has kept up with it should be remarkable, but keeping up is not enough for Chicago.

Naturally, it is a very different airport that handles the volume of business that the area from whose neighborhood runway the first plane took off in 1922. Today it is, with the possible exception of Newark, the busiest airport in America. It is the only one serving seven foreign air lines (American, United, TWA, Eastern, Northwest, Chicago & Southern and Braniff).

The corner of a section of land has been expanded into a full square mile, except for twenty acres at the south-west corner retained for school purposes. The land was

leased by the city from the Board of Education in 1931 at an annual rental of \$25.00 an acre. The rental goes up with the years until the city will pay \$30.00 from 1940 to 1951, when a permanent rental is to be determined, based on a percent of an appraisal of that date. The value of this land, just a little more than six miles from the heart of the city, is such that the rental is likely to preclude operation at a profit for many years to come, unless the city can support sale to the airport.

When the airport was established in 1922 the people of Chicago voted a bond issue of \$400,000 for necessary improvements. Since all this was spent on runways and the original administration building and only \$90,000 subsequent expenditures by the city have made the city's total capital outlay approximately \$490,000 and the present terminal building, as it now stands, represents an investment of about \$250,000. Within its limits it is an efficient structure, but it is inadequate for all the needs of the field. One important line has insisted often upon its provide property across the street and the city is being resource it ample service if more space was available at the airport.

With the tremendous growth of air transport and the need it soon becomes evident that additional funds would

As told to
Edward Betts by
Edward J. Kelly
Mayor of Chicago

to Welcome

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February 1935

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1938

Design TRENDS

There was (and not so long ago either) that people were willing to dash through a forest of aunts and uncles to wedge themselves into curves, asymmetries, dirty angles, and to ride as an airplane. Usually, they seemed to like it, and, furthermore, have been known to pay out good money for the privilege.

But times have changed. And if you don't believe it, arise looking over the pictures on these pages, take a walk around the Show floor and look inside the airplanes you will see on display there. You will find standards of comfort, convenience and comfort on a par with the latest automobile. You will find cabins that are temperature, sound and ventilation for your comfort, winter or summer, at 12,000 or 15,000 ft. Even among the little fellows you will find the newest gadget the rule rather than the exception, although there are still plenty of sportsmen who prefer open air flyers.

You will find the safety and convenience features you'll arranged, with lighted instrument boards, safety seats and emergency equipment stowed properly and will keep you safely through bad weather. Training edge flaps to reduce your gliding speed and steady auto-rotation—where landing hazards. Efficient brakes will bring your

ship quickly to a halt. And here and there is cropping up that precious revival of an old idea, the biplane landing gear.

Other new ideas are just filtering down from the transport field into the realm of the private airplane owner. For not too great additional cost you may fit your engine with one of several types of carburetors, push propellers (even with full automatic pitch control) to improve the overall performance of your ship. There too, the adjustable control tab on radials and elevators first used on the transports, has replaced the older adjustable fin or stabilizer idea for increasing air flow.

One accessory that deserves special mention is the fixed type landing gear. With the addition of a pair of doors to your equipment (and most airplanes provide for single changeover from wheels to floats, and vice versa) you can extend your range of operations to never run amok in river and lake regions where confined bays and harbors often necessitate landing facilities.

Examine the pictures on these pages or look over the ships at the Show and you will agree that our designers are not overlooking any hole in making airplanes for your use that are safe, comfortable and convenient.



The latest Fleetwing biplane carries its landing gear in an overhead nacelle.

The power of 144 horses is packed into the nose of this Lockheed 12.



This Model 12 biplane will maintain flight fully loaded, with only one of its two engines operating.

Sliding the hood of your motorcar is no simpler than uncranking the engine of the latest Ryan 50.

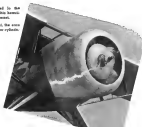


Counting Noses



A Ranger engine furnished to the latest Fleetwing 24 carries this beautiful and efficient nose installation.

One of two Lockheed 12s, the nose of the Henry (left) the latest Republic biplane.



A biplane with gear gives away power to the Polaris engine in the Deane Alcon.

A Mustang engine is closely cradled in the nose of this Republic speedster.



Landing Gears

and Such...



Severe testing of wing wheel and its retractable landing gear



A portion of the Republic Executive star here showing landing gear mechanism



Rolling up a wheel of the Standard S-40

Revised de Havilland of Fleet-wing replaces the operation of the British retracting gear (left)

Revised Sparhawk landing gear



Revised view of Sparhawk landing gear



ONLY A SHORT TIME BACK landing gears were left to the mercy of the elements, and the only way to get them out of the mud was to get them out of the mud. Now, though, the importance of landing gears in 1935 proved the necessity of retractable landing gears in required several years for them to find widespread practical application. At present landing gears have been almost up to the mark in retractability, and flaps have been installed in ships of great modern performance.

A glance at these typical landing gear designs for 1935 shows at once that much thought has gone into the particular kinds of retractable engineering since the days of wire wheels and straight axles. Fixed types show a marked trend toward the installation of shock absorbing mechanism in a single strut or up inside of the landing gear. The mechanical operation of retractable types has been improved in the past where one retractable gear is a wheel-up landing gear by mechanical failure. Important advances have been made in the development of push-out controls for flaps, simplifying the process of using them in landing and, to an interesting extent, as an aid in take-off.



Details of the Sparhawk landing gear

A lever operated retractable flap is a feature of the Fairchild Waco 24



Flap gear in action on the Beach 24



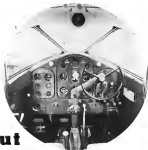
Flap gear on the Vulture



How landing with no drop off in lift is obtained by the projected flaps of the Ryan S-C



Inside Looking Out



NOT MANY YEARS ago the first rider's dominant impression was that he was surrounded by clusters of tubes with fabric ballooning in the breeze. In this year's airplane, the impression of blimpiness has entirely disappeared. Even in the little biplane, where the skin material weighs many times as much, the structural members have been cleverly concealed. You feel that you are riding in a vehicle, not a cloth-covered cage.

Automobile practice has been followed not only in the selection of instruments and arrangement in the arrangement and simplification of instrument layout. Wheel controls are almost universal excepting in airplanes designed primarily for training and the push-pull wheel with separating mechanism completely out of sight, is rapidly becoming the recognized type. In one new and unusual type of modern airplane the sensitive control has been carried to the point where all control in the air is handled by the wheel, two automobile type pedals are for braking and flap control, and the throttle is locked up to a foot accelerator.

- 1.—Looking at the instruments in your Peabody 41
- 2.—Alpaca or automobile? The Waco C and H
- 3.—How passengers can sit in comfort in a
- 4.—The Gates cockpit looks mighty like a motor
- 5.—Plenty of space is available in the Bess 32
- 6.—Overhead instrument board arrangement in the
- 7.—Waco's triple landing gear provides unusual
- 8.—Push-pull wheel control is a feature of the
- 9.—The typical grouping of instruments in the
- 10.—Overhead wheel control is a feature of the



Shore Construction, Inc.
Office Building Corp.
Lowell City Corp.
Portland Street Corp.
Burlington Mason Co.

English — Arabic — French

AC Sports Flag Div. of General Motors
Acme Sports Flag Co., Inc.
The S. O. Corp.
Dunham Sports Flag Co.
Denville Motors Co., Inc.

Further Studies

Acme Supply Co.
Eastern Appliance Corp.
Fidelity Laboratories, Inc.
Lynch White Co.

Student Number

Joseph Desjardins Co
Aluminum Co of America
Bessemer Corporation
Buckeye, Ind
Full Joseph Desjardins Co
Harris & Boush
Dunsmuir Welded Products Co

Positive Values

Julius Mauer Products Co.
Rebel Press Corp.
The White Building, Inc.
Winn-Dixie Corp.

Basics: Microtubules

Air-Max Corp. (no release)
 Air-Tec Corp. Equip., Inc. Indianapolis
 (info)
 Aircraft Development Co.
 Aircraft Mail Boxes Etc. American States Co.
 Aero Engineering Corp. (all items)
 Edison Aircraft Corp.
 Hagerman Mfg. Co. (updates)
 General Equip. Co.
 Great Plains Mfg. Co. (new items)
 Johns-Wiley Publishing Co.
 Lashburn Mfg. Co. Inc.
 Kline Instrumental, Inc. (all and part items)
 Foreman Co.
 Morse-Walker Corp. Indianapolis period
 items only
 R. L. Wynn, United Mfg. Co. (new items)

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INTRODUCTION

Presenting Materials

American Van-Graze Horse Care
Angela M. G. Co.
Barnes, M. G. Co.
Barnes, M. G. Co.
Barnes, M. G. Co.
Barnes, M. G. Co.

Chemical Composition

Stone Products Co.
 Ontario Corp.
 J. R. Bond
 Tucker's Turb. Buret, Inc.
 J. R. Bond Co.
 New Union Prod. Co.
 Raynor Chemical Co.
 Oakum Products, Inc.
 Tulsa Products, Inc.

Televisión (Requisitos)

1. C. Olsen Co.
 Coffey & Adams Co.
 Coleman Corp.
 E. J. de Paul & Sonnet Co.
 Eagle-Globe Lathing Co.
 Johnson & Pankow, Inc.
 Leonard Mfg. Co.
 The Lathco Co.
 Minneapolis Mfg. Co. (Stock Co)
 Northwestern Mfg. & Wood Mfg. Co.
 F. Reinhardt & Co.
 Seligson Lumber
 W. S. Snyder Products, Inc.
 Wm. Wilson & Co.

Evaluation (1999)

Mr. Asa Briggs Ltd.
Sunderland Works, Carr & Brown & Co., Ltd.
Widnesport, Birkenhead.

References

American Chemical Paint Co.
Bayer Bros., Inc.
Cresk Paint & Varnish Co.
E. I. du Pont de Nemours Co.
Graham Co.



Model 4: Exponential Autoregressive	Log-Linear	Bayesian Model: Generalized
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Jack Tretton

John-Manville, Inc.
Lana Fibers
Mormon Chemical Co.
Rohmco Yarns Co.
Perry-Austin Mfg. Co.
Pharmaceutical Products Co.
Pittsburgh Plate Glass Co.
Pitt & Langford, Inc.
Rockwell Chemical Products Co.
Shaw-Walker Co.
Tenneco Ind. Co.
Tenneco, Inc.
U. S. Synthetic Corp.
Valentine & Co.
Waco Shale-Recreation Corp.
Waco, Inc.

Books and films

Alameda Refractories Co.
 Olsen Refractories Co.
 Crowley Refractories Co.
 Royal Refractories Co.
 Hall Refractories Co.
 Reed Refractories Co.
 Lubrizol Refractories Co.

Polaris Petroleum Co.
 Park Oil Co.
 Richfield Oil Corp.
 Shell Petroleum Corp.
 Shell Eastern Petroleum & Products
 Shell Oil Co.
 Sinclair Refining Co.
 Sonoco Refining Co.
 Standard Oil Co. of Cal.
 Standard Oil Co. of Ind.
 Standard Oil Co. of Ky.
 The Texas Co.
 T.M. White Oil Co.
 Wabash Oil Co.

Class. no.

American Wholesaler, Inc.
24 West 57th St.
Liberty Square, New York, N.Y.
Fishers' Fair Club Co.
Riverside, N.Y.

Keywords: *work, stress, coping, health, well-being*

American Felt Co.
American Beer & Ice Co.
South Felt Co., Inc.
The Burgess Masonry Co.
Dix Beer Corp.
The Wilson Co.
Luna-Neville Co.
Jensen Feed Co.

Abstract

Alkathay Steel Co.
 Aluminum Co. of America
 American Seaboard, Inc.
 American Steel Co.
 American Magnesium Co.
 American Sheet & Tube Co.
 American Steel & Wire Co.
 Atlas Steel Casting Co.
 Beach Window & Tool Co.
 Bethlehem Steel Co.
 Brantley Bros. & Moore Co.
 C. C. Brown & Sons, Inc., Inc.
 Carborundum Co.
 Cleveland Iron & Copper Co., Inc.
 Crown Wire-Rod Co.
 Continental Steel Corp.
 Corbitt Steel Co.
 Crow Chemical Co.
 Denver Manufacturing Co.
 Haverly Steel Co.
 International Sheet Co.
 U. S. Steel Corp.

Bakken, Synthesis, etc.

Journal: Earl Kohn D.
Editor: Corp.
Publisher: J. J. M. Co.
Address: 1000 10th St.

† There is no direct effect.

AMERICAN PLANES AND ENGINES





Деронса К

Reproductive Corporation of America
Clonidine, 2.

Moore, K is available as a single-phase or sorphase (J&S). A third variation, the KC, is a single-phase powered by the 80 by Continental.

Engineered by Armstrong
Company of America, Service
Steel, Structural Mills, Lumber
Corp., de Pont, Tidewater, Felt-
on, Vosses Hoffman, McWane,
Aero Corporation of America,
Gambier or Freestone, Shaws,
Grimes, E.C.A., Newark War-
ner, Associates, Aircraft Con-
trols, Ltd. and others.



Aerona LC

Association: Corporation of America
 Copyright: ©

Factor with the Western Mfg. Co., the American L.C. is the simplest low wage model. Like the KC Series of models it is also available as a fireplace or a complete equipment by Aluminum Company of America, Service Steel, Russell Mills, L. E. Carpenter, de Paul, Deery Brothers, Pelzer, Norman Hallmark, McWayne, Aero Corporation of America, Goodhue, Grasso R.C.A., Aero-Marine, Pioneer Plastics, and Elio.



Air Transport Mfg. Co. Inc., Glen
dale, Ill.

NEWELL SYSTEMS models offers bi-32 Transport Manufacturing Company and the P-2 and P-2S produced under ATC Nos. 402 and 405 respectively. Power plant in both cases is the 100 hp. Warner.

Representatives in: American
Company, of America, Summit
Oil, Washington State, Eagle-C
tain, Ploughman, Sherwin-W
house, Fisher Building, Ar
Transport, Goodspeed, Great
Power and Power.



T-6, B-6, B-8

As Directed Mfg Co., Ltd. Gen
4-10-1911

With various options, all four include the trimmer T1 (Kaiser), and two to four engine models: the B-6 and B-8 (and B-10, B-12, and B-14).

Equipment by: Alcoa/Armco Company of America, Sumner/Wellington Steel Limited, Pittsburgh and Pilegrus—Shaw-Wallace, Jafar, Boshing Cleveland, Pneumatic Control Auto Fan, Gowers and Fyfe National, R.C.A., Power on Weston, Lord, and Paxon.

[illegible]

Abrams Explorer

Alvarez Air Credit Corp.
 Lexington, Mass.

DESIGNER SPEEDS HE MAKES for aerial photography and survey work, the EagleOne is said to be produced by the Aerospace Air Craft Corporation. Construction on the first of these ships started about a year ago. First ship is powered by the Wright J-45-81, engine of 330 hp and production has been made for installation of a 450 hp engine. Later models will be developed for engines up to 1000 hp for better performance.

**American Eagle**

James E. Doyle, Director, American Corp.
New York, N.Y.

Persons with the 41 by 54 in. study suggest the American Escalator model is substantially similar to that sold last year. Special equipment includes a simple hinge stabilizing system and complex dual controls for use of the step in station training.

Accessories include free extra guard, first aid kit, fire hoods, safety belts, etc. The B-32 Escalator is manufactured under Department of Commerce Approved Type Certificate No. 430.

Answer: Microsoft Corp.
Hershey, Pa.

A new experimental model (No. 100) has been added to the Aerozone line. The new ship uses a 90-hp Ford V-8 engine with an overhead valve type of cooling. Apparently, higher performance is expected as a result of the new engine design.

Imported by Goodrich Goodrich Dubba Hays West and Pyrene deFon. Dealer & Ship, Boston, Green, L. S. Co. Veneerist Ford. As Veneerist and Walling.



TSP-1

Bookley Case, Alameda Corp., Detroit, Mich.

Executive is now an official
top of each cellular wire
structure the Hologic 6000
180-2 has replaced the 180-1
and -200 and -200 required in the
5th Commercial Service

Equipment by: Aluminum Company of America, Whittier; Williams Instrument, Lake Zurich; Plexiglas, Bette Brothers, Fairport; McWane Cleveland Pipe and Foundry, Mass.; Woodstock and Grimes, R.C.A. Electronics, Waco; Lord and Ray.





Beechcraft D

The Beech Aircraft Co.
Wichita, Kans.

FOR INFORMATION on the 4200 lb. gross class certificate the D-100, power plant range from 300 to 600 hp.

Equipped by Aluminium Company of America, Hammer, Shick, Sells, Wadsworth, Seale, L. C. Chase, and Lull, Inc., Pittsburgh Plate Glass, Berry Brothers, Fisher, McWright, Beach, General, Goodwin, Pittman, Green, Prosser, Kallman, Sperry, Lord, and Kelle.

Beechcraft E

The Beech Aircraft Company
Wichita, Kans.

WEIGHT E BEACRAFT are of 1300 lb. gross weight and are made in two models, E-108 and E-107 B, with Jacobs engines.

Equipped by Aluminium Company of America, Hammer, Shick, Sells, Wadsworth, Seale, L. C. Chase and Lull, Inc., Pittsburgh Plate Glass, Berry Brothers, Fisher, McWright, Beach, General, Goodwin, Pittman, Green, Prosser, Kallman, Sperry, Lord, and Kelle.



14-9, 14-7

Bellanca Aircraft Corp.
New Castle, Del.

DESIGN is completion for the International Air Show the series of three about Bellanca Model 14 is an interesting addition to the smaller airplane field. Two variants the 14-8 (14 Bell 90) and 14-7 (14 Bell 70) are available. The 14-9 is equipped with retractable landing gear and short wings and a tail wheel while the 14-7 has fixed landing gear and also, and a tail wheel.

Skyrocket

Bellanca Aircraft Corp.
New Castle, Del.

THE SKYROCKET Interceptor and Skyrocket (Curtis model) one built to be available. Both planes are checked in dimensions. The former Skyrocket was the 475-hp Wright Whirlwind while the latter Skyrocket is powered by the 500-hp P & W Wasp.

Equipped by Goodrich, General, Shick, Sells, Wadsworth, Seale, L. C. Chase, and Lull, Inc., Pittsburgh Plate Glass, Berry Brothers, Fisher, McWright, Beach, General, Goodwin, Pittman, Green, Prosser, Kallman, Sperry, Lord, and Kelle.



Manufacturer	Designation or Model No.	Weight	Power Plant	Performance
Beechcraft D	4200 lb.	300-600 hp	1300 lb.	1300 lb.
Beechcraft E	1300 lb.	1300 lb.	1300 lb.	1300 lb.
Beechcraft 14-9	14-9	14-9	14-9	14-9
Beechcraft 14-7	14-7	14-7	14-7	14-7
Beechcraft 14-8	14-8	14-8	14-8	14-8
Beechcraft 14-6	14-6	14-6	14-6	14-6
Beechcraft 14-5	14-5	14-5	14-5	14-5
Beechcraft 14-4	14-4	14-4	14-4	14-4
Beechcraft 14-3	14-3	14-3	14-3	14-3
Beechcraft 14-2	14-2	14-2	14-2	14-2
Beechcraft 14-1	14-1	14-1	14-1	14-1
Beechcraft 14-0	14-0	14-0	14-0	14-0
Beechcraft 13-9	13-9	13-9	13-9	13-9
Beechcraft 13-8	13-8	13-8	13-8	13-8
Beechcraft 13-7	13-7	13-7	13-7	13-7
Beechcraft 13-6	13-6	13-6	13-6	13-6
Beechcraft 13-5	13-5	13-5	13-5	13-5
Beechcraft 13-4	13-4	13-4	13-4	13-4
Beechcraft 13-3	13-3	13-3	13-3	13-3
Beechcraft 13-2	13-2	13-2	13-2	13-2
Beechcraft 13-1	13-1	13-1	13-1	13-1
Beechcraft 13-0	13-0	13-0	13-0	13-0
Beechcraft 12-9	12-9	12-9	12-9	12-9
Beechcraft 12-8	12-8	12-8	12-8	12-8
Beechcraft 12-7	12-7	12-7	12-7	12-7
Beechcraft 12-6	12-6	12-6	12-6	12-6
Beechcraft 12-5	12-5	12-5	12-5	12-5
Beechcraft 12-4	12-4	12-4	12-4	12-4
Beechcraft 12-3	12-3	12-3	12-3	12-3
Beechcraft 12-2	12-2	12-2	12-2	12-2
Beechcraft 12-1	12-1	12-1	12-1	12-1
Beechcraft 12-0	12-0	12-0	12-0	12-0
Beechcraft 11-9	11-9	11-9	11-9	11-9
Beechcraft 11-8	11-8	11-8	11-8	11-8
Beechcraft 11-7	11-7	11-7	11-7	11-7
Beechcraft 11-6	11-6	11-6	11-6	11-6
Beechcraft 11-5	11-5	11-5	11-5	11-5
Beechcraft 11-4	11-4	11-4	11-4	11-4
Beechcraft 11-3	11-3	11-3	11-3	11-3
Beechcraft 11-2	11-2	11-2	11-2	11-2
Beechcraft 11-1	11-1	11-1	11-1	11-1
Beechcraft 11-0	11-0	11-0	11-0	11-0
Beechcraft 10-9	10-9	10-9	10-9	10-9
Beechcraft 10-8	10-8	10-8	10-8	10-8
Beechcraft 10-7	10-7	10-7	10-7	10-7
Beechcraft 10-6	10-6	10-6	10-6	10-6
Beechcraft 10-5	10-5	10-5	10-5	10-5
Beechcraft 10-4	10-4	10-4	10-4	10-4
Beechcraft 10-3	10-3	10-3	10-3	10-3
Beechcraft 10-2	10-2	10-2	10-2	10-2
Beechcraft 10-1	10-1	10-1	10-1	10-1
Beechcraft 10-0	10-0	10-0	10-0	10-0
Beechcraft 9-9	9-9	9-9	9-9	9-9
Beechcraft 9-8	9-8	9-8	9-8	9-8
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Beechcraft 9-6	9-6	9-6	9-6	9-6
Beechcraft 9-5	9-5	9-5	9-5	9-5
Beechcraft 9-4	9-4	9-4	9-4	9-4
Beechcraft 9-3	9-3	9-3	9-3	9-3
Beechcraft 9-2	9-2	9-2	9-2	9-2
Beechcraft 9-1	9-1	9-1	9-1	9-1
Beechcraft 9-0	9-0	9-0	9-0	9-0
Beechcraft 8-9	8-9	8-9	8-9	8-9
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Beechcraft 8-6	8-6	8-6	8-6	8-6
Beechcraft 8-5	8-5	8-5	8-5	8-5
Beechcraft 8-4	8-4	8-4	8-4	8-4
Beechcraft 8-3	8-3	8-3	8-3	8-3
Beechcraft 8-2	8-2	8-2	8-2	8-2
Beechcraft 8-1	8-1	8-1	8-1	8-1
Beechcraft 8-0	8-0	8-0	8-0	8-0
Beechcraft 7-9	7-9	7-9	7-9	7-9
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Beechcraft 7-4	7-4	7-4	7-4	7-4
Beechcraft 7-3	7-3	7-3	7-3	7-3
Beechcraft 7-2	7-2	7-2	7-2	7-2
Beechcraft 7-1	7-1	7-1	7-1	7-1
Beechcraft 7-0	7-0	7-0	7-0	7-0
Beechcraft 6-9	6-9	6-9	6-9	6-9
Beechcraft 6-8	6-8	6-8	6-8	6-8
Beechcraft 6-7	6-7	6-7	6-7	6-7
Beechcraft 6-6	6-6	6-6	6-6	6-6
Beechcraft 6-5	6-5	6-5	6-5	6-5
Beechcraft 6-4	6-4	6-4	6-4	6-4
Beechcraft 6-3	6-3	6-3	6-3	6-3
Beechcraft 6-2	6-2	6-2	6-2	6-2
Beechcraft 6-1	6-1	6-1	6-1	6-1
Beechcraft 6-0	6-0	6-0	6-0	6-0
Beechcraft 5-9	5-9	5-9	5-9	5-9
Beechcraft 5-8	5-8	5-8	5-8	5-8
Beechcraft 5-7	5-7	5-7	5-7	5-7
Beechcraft 5-6	5-6	5-6	5-6	5-6
Beechcraft 5-5	5-5	5-5	5-5	5-5
Beechcraft 5-4	5-4	5-4	5-4	5-4
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Beechcraft 5-2	5-2	5-2	5-2	5-2
Beechcraft 5-1	5-1	5-1	5-1	5-1
Beechcraft 5-0	5-0	5-0	5-0	5-0
Beechcraft 4-9	4-9	4-9	4-9	4-9
Beechcraft 4-8	4-8	4-8	4-8	4-8
Beechcraft 4-7	4-7	4-7	4-7	4-7
Beechcraft 4-6	4-6	4-6	4-6	4-6
Beechcraft 4-5	4-5	4-5	4-5	4-5
Beechcraft 4-4	4-4	4-4	4-4	4-4
Beechcraft 4-3	4-3	4-3	4-3	4-3
Beechcraft 4-2	4-2	4-2	4-2	4-2
Beechcraft 4-1	4-1	4-1	4-1	4-1
Beechcraft 4-0	4-0	4-0	4-0	4-0
Beechcraft 3-9	3-9	3-9	3-9	3-9
Beechcraft 3-8	3-8	3-8	3-8	3-8
Beechcraft 3-7	3-7	3-7	3-7	3-7
Beechcraft 3-6	3-6	3-6	3-6	3-6
Beechcraft 3-5	3-5	3-5	3-5	3-5
Beechcraft 3-4	3-4	3-4	3-4	3-4
Beechcraft 3-3	3-3	3-3	3-3	3-3
Beechcraft 3-2	3-2	3-2	3-2	3-2
Beechcraft 3-1	3-1	3-1	3-1	3-1
Beechcraft 3-0	3-0	3-0	3-0	3-0
Beechcraft 2-9	2-9	2-9	2-9	2-9
Beechcraft 2-8	2-8	2-8	2-8	2-8
Beechcraft 2-7	2-7	2-7	2-7	2-7
Beechcraft 2-6	2-6	2-6	2-6	2-6
Beechcraft 2-5	2-5	2-5	2-5	2-5
Beechcraft 2-4	2-4	2-4	2-4	2-4
Beechcraft 2-3	2-3	2-3	2-3	2-3
Beechcraft 2-2	2-2	2-2	2-2	2-2
Beechcraft 2-1	2-1	2-1	2-1	2-1
Beechcraft 2-0	2-0	2-0	2-0	2-0
Beechcraft 1-9	1-9	1-9	1-9	1-9
Beechcraft 1-8	1-8	1-8	1-8	1-8
Beechcraft 1-7	1-7	1-7	1-7	1-7
Beechcraft 1-6	1-6	1-6	1-6	1-6
Beechcraft 1-5	1-5	1-5	1-5	1-5
Beechcraft 1-4	1-4	1-4	1-4	1-4
Beechcraft 1-3	1-3	1-3	1-3	1-3
Beechcraft 1-2	1-2	1-2	1-2	1-2
Beechcraft 1-1	1-1	1-1	1-1	1-1
Beechcraft 1-0	1-0	1-0	1-0	1-0

Beechcraft 18

The Beech Aircraft Co.
Wichita, Kans.

IN THE last engine class Beechcraft has added the 18(A) and 18(B). The former into the 100 hp Wright Whirlwind and the latter 200 hp Jacobs engines. A.T.C. No. 800 has been granted to the 18(A) and No. 805 to the 18(B).

Equipped by Hayes, Knott, Palmer, Schick, Hamilton, Standard, Cawin, Reed, Goodwin, Green, Francher, Plate Glass, Air Associates, Etkin, Prosser, and Wichita.

28-70, 28-90

Bellanca Aircraft Corp.
New Castle, Del.

A new version of the Learner 28-70 Plan has been added to the Bellanca line. Both ships are similar in general dimensions and design.

Equipped by Aluminium Company of America, Hammer, Shick, Sells, Wadsworth, Seale, L. C. Chase and Lull, Inc., Pittsburgh Plate Glass, Berry Brothers, Fisher, McWright, Beach, General, Goodwin, Pittman, Green, Prosser, Kallman, Sperry, Lord, and Kelle.



Aircruiser

Bellanca Aircraft Corp.
New Castle, Del.

A single plane in which the typical Bellanca flying wings fuselage can take up to its lower end in the fuselage design. It has been designed to be used in the transport of being converted to remote control and has been used to great advantage in many operations.

Equipped by Goodrich, General, Shick, Sells, Wadsworth, Seale, L. C. Chase and Lull, Inc., Pittsburgh Plate Glass, Berry Brothers, Fisher, McWright, Beach, General, Goodwin, Pittman, Green, Prosser, Kallman, Sperry, Lord, and Kelle.

Boeing 307

Boeing Aircraft Co.
Seattle, Wash.

CONSTRUCTION work is being completed on the Boeing 307 high altitude transport plane which is to be placed in service shortly in TWA, and other airline operations. The Boeing 307 is powered by four Wright Cyclone engines and is designed for a range of 3000 miles. Capacity for 37 persons is provided. Gross weight is 42000 lb. A cruising speed of 215 m.p.h. at 10000 ft. is reported by the designers.





Boeing 314

Boeing Aircraft Co.
Seattle, Wash.

Described originally for the trans-oceanic service of Pan American Airlines is the Boeing 314 as 80-passenger flying boat of 32,500 lb. gross weight. Power plant for the new flying boat is four double-row Wright Cyclone engines aggregating 4400 hp. in two rows. Construction work on the 314 is well under way and the ship should be ready for service in the near future.



Brown B-3

Leitch-Wright B. Brown, Aircraft Co., Los Angeles, Calif.



19-R

St. Louis Airp. Div., Curtiss-Wright
St. Louis, Mo.

Available for a number of utility purposes is the Curtiss-Wright 19-R. Power plant is the 425 hp. Wright Whirlwind engine. The 300 weighs 3,500 lb. gross and 2,118 lb. empty. It is designed to include wheel gear as an optional equipment. This model is available for export, as well as for the domestic market. High speed is 200 m.p.h. (2000 ft.) and cruising, 150 m.p.h. (several altitudes).

A-19-R

St. Louis Airp. Div., Curtiss-Wright
St. Louis, Mo.

Similar to the 19-R in general design and dimensions is the A-19-R model produced in the St. Louis division of the Curtiss-Wright Corp. This model is also equipped with the 425 hp. Wright Whirlwind engine. The gross weight is 3,200 lb., or slightly lower than that of the 19-R. Although not in active production at the present time it is available for the domestic or foreign market on order.



Manufacturer	General				Power Plant				Performance									
	Designation or Model No.	A.E.C.	Pass.	Seas.	Model	Rated hp.	Test hp.	Test revs.	Max. speed	Max. alt.	Max. range	Max. climb	Max. rate	Max. fuel	Max. oil	Max. temp.	Max. pressure	Max. weight
Boeing Aircraft Co. Seattle, Wash.	314	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500
Boeing Aircraft Co. Seattle, Wash.	299X	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500
Boeing Aircraft Co. Seattle, Wash.	314	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500
Boeing Aircraft Co. Seattle, Wash.	314	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500
Boeing Aircraft Co. Seattle, Wash.	314	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500
Boeing Aircraft Co. Seattle, Wash.	314	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500
Boeing Aircraft Co. Seattle, Wash.	314	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500
Boeing Aircraft Co. Seattle, Wash.	314	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500
Boeing Aircraft Co. Seattle, Wash.	314	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500
Boeing Aircraft Co. Seattle, Wash.	314	14	80	100	Wright Cyclone	4400	4400	2100	210	2100	2100	2100	2100	2100	2100	2100	2100	32500

Weights				Dimensions				Area (sq. ft.)				Wings				Loading Gear			
Empty	Max. gross	Max. payload	Max. fuel	Span	Wing	Wing	Wing	Wing	Wing	Wing	Wing	Wing	Wing	Wing	Wing	Wing	Wing	Wing	Wing
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19-R	3500	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
A-19-R	3200	2118	1382	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B-3	3500	2118	1382																



Hawk III, IV

Curtiss Aero. Div., Curtiss-Wright Corp., Buffalo, N. Y.

Set to enter production for the export market are the Curtiss Hawk III and IV models to perform the same service but have made them really famous. Distinctively the two models are similar but a slightly higher powered engine in the Model IV gives it a somewhat higher performance. Both engines are Wright Cyclones, one being rated at 750 hp and the other at 745 hp.

Hawk 75

Curtiss Aero. Div., Curtiss-Wright Corp., Buffalo, N. Y.

Most recent of the Hawk design is not in production but is highly streamlined low wing single under monoplane with a top speed of 253 mph at 20,000 ft. The Hawk 75 is powered by an 800 hp Wright Cyclone engine and has a normal cruise of 547 mph. This model is in active production at the Curtiss Aeroplane Division plant and is available for the domestic or export market.



Three
View
Drawings
Not
Released

YIP-37

Curtiss Aero. Div., Curtiss-Wright Corp., Buffalo, N. Y.

Powered by the venerable Consolidated Allison engine, the YIP-37 model marks the return of Curtiss-Wright to the construction of airplanes for board combat power plants. The YIP-37 is an all-metal amphibious patrol ship, used by the Army Air Corps. Performance and weight details have not yet been released by the Air Corps. The YIP-37 is not available for export.

P-36-A

Curtiss Aero. Div., Curtiss-Wright Corp., Buffalo, N. Y.

The Curtiss-Wright P-36-A, single under piston plane has been sold exclusively by the Army Air Corps. This model is in current production at the Buffalo plant. Power plant for this model is the Pratt & Whitney Wasp engine. Construction is entirely all aluminum alloy. The P-36-A is not available for export. Performance and weight data have not yet been released by the Air Corps.



Model/Version	Description of Model/Version	General			Power Plant										Performance									
		Wt. (lb.)	Wt. (lb.)	Wt. (lb.)	Engine	HP	Max. Speed (mph)	Altitude (ft.)	Range (mi.)	Service Ceiling (ft.)	Rate of Climb (ft./min.)	Max. Endurance (hr.)	Max. Fuel Capacity (gal.)	Max. Fuel Consumption (gal./hr.)	Max. Altitude (ft.)	Max. Speed (mph)	Altitude (ft.)	Range (mi.)	Service Ceiling (ft.)	Rate of Climb (ft./min.)	Max. Endurance (hr.)	Max. Fuel Capacity (gal.)	Max. Fuel Consumption (gal./hr.)	Max. Altitude (ft.)
Curtiss Hawk III	Single engine, high wing, biplane	5,500	5,500	5,500	Wright Cyclone	750	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	25,000	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	
Curtiss Hawk IV	Single engine, high wing, biplane	5,500	5,500	5,500	Wright Cyclone	745	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	25,000	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	
Curtiss Hawk 75	Single engine, low wing, monoplane	5,500	5,500	5,500	Wright Cyclone	800	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	25,000	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	
Curtiss YIP-37	Single engine, amphibious	5,500	5,500	5,500	Allison V-12	1,200	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	25,000	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	
Curtiss P-36-A	Single engine, low wing, monoplane	5,500	5,500	5,500	Pratt & Whitney Wasp	1,000	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	25,000	253	20,000	1,000	15,000	1,000	1.5	1,000	1,000	



Seagull

Curtiss Aero. Div., Curtiss-Wright Corp., Buffalo, N. Y.

Available in either a land or sea plane, the Curtiss-Wright Seagull is now in active production and available for export. Power plant for motor model is the 500 hp Pratt & Whitney Wasp engine. At certified altitude the maximum speed is 186 mph and the cruising speed is 136 mph. A dual fuel and intake manifold system, the Seagull has tandem seating arrangement for two persons.

Helldiver-77

Curtiss Aero. Div., Curtiss-Wright Corp., Buffalo, N. Y.

Designed for Naval Armament carrier operations the Helldiver-77 has been released for export sale by the Navy Department. At present it is in active production. The Helldiver is a two-seat, high performance, lightening aircraft used to dive-bombing functions. It is powered by the 850 hp Pratt & Whitney Wasp Junior engine. Performance data is still on the confidential list.



Y1A-18

Curtiss Aero. Div., Curtiss-Wright Corp., Buffalo, N. Y.

POWERPLANT in considerable numbers by the Army Air Corps, the Curtiss-Wright Y1A-18 was on general release, plane is now in production at the Buffalo plant. The Y1A-18 is powered with 2 Wright Cyclone engines developing an aggregate of 2,000 hp at sea level. The Y1A-18 is of metal construction. Performance and weight open figures are not released. The Y1A-18 is not available for export.



Consolidated XPB2Y-1

Consolidated Aircraft Corp., San Diego, Calif.

Douglas Bomber

Douglas Aircraft Company, Santa Monica, Calif.





Dart C

Bei Wundheilung: Gips
Schmerzmittel

Manufactured and built by the Messerschmitt Corporation, the Messerschmitt Model G was bought by the Pratt Company, which is now getting into aircraft production. Camp 2 Bikes is expected to be remade to A.T.C. in the near future.

Equipment by: Suncoast, Vaganes, La France, Collins, Terry Brothers, Grims, Sher-Hack, Aerial Control, General Truck, Pikes, H&H, Rushing, Dart and General Tire Company.



Douglas DC-2

Eruglan Alvesti Co.
Santo Domingo, Chile

Aspirin, with either Wright or Frost & Whitcomb capsules.
Equipment by Wisconsin Co.,
Suzanne, Lauder, Potbury
Hale, Somerset, Hildreth, Can-
field, Vickers, de Paul, Jolles,
Paine, Voss, Huthamer, Fed-
eral, Bender, Uvstad, Mac-
White, Goodrich, Billings &
Spencer, General Metals. Ex-
act, Electric Shop, New Portland,
General Cable, Lamps, Aero
Supply, Liquidator, Lord,
Kodman, Sperry, Sells, Grace,
and Almon.



8A, 8A-1, 8A-2

Neelley Dies, Displeased Already
Inglewood, Calif.

Waukeet Year & Whitney and Diesel engine modifications are used in these models ranging from 700-1,075 hp. Top speeds range from 280-320 mph.

Experiments at the University of Georgia, Athens, Ga., University of Maryland, College Park, Md., University of Michigan, Ann Arbor, Mich., University of Minnesota, St. Paul, Minn., University of Missouri, Columbia, Mo., University of Nebraska, Lincoln, Neb., University of North Carolina, Chapel Hill, N.C., University of Oklahoma, Norman, Okla., University of Oregon, Eugene, Ore., University of Pennsylvania, Philadelphia, Pa., University of South Carolina, Columbia, S.C., University of Tennessee, Knoxville, Tenn., University of Texas, Austin, Tex., University of Wisconsin, Madison, Wis., University of Wyoming, Laramie, Wyo., and the U.S. Forest Service, Forest Sciences Laboratory, Broomfield, Colo.



Fairchild 24

Fairchild, H. A., and
H. A. Fairchild, 1944.

Two M-series and two Ranger models are provided for the new Firechild 24. Standard and the base models for each engine have similar dimensions.

Equipment by Alton and Company, or American. Samsonite Samsonite Mills, Crafts Mills, Kuhn & Hays, Perry Brothers, Foster, Simon-Hoffman, Rocking, Fairfield, General and Goodrich, Warner, Green, R. L. American, Lord, and P. H. Day.

[illegible]

Douglas DC-3

Deputy Sheriff Co.
Santa Monica, Calif.

Wacker or Paver & Wacker
engines are used on the DC 3
model.

Equipment Co., Alhambra, Co.,
Seminole, Lucerne, Pittsburgh
Plate, Samwerdt, Hulsbeck, Dry
mble, Memphis, de Post, Fuller
Baker, Norton-Richman, Hill-
erd, Reuter, Cleveland, Mac-
Whorter, Goodrich, Williams &
Spencer, General, Meritt, Phil-
adel, Florida, King, Van, Parkard
General, Calde, Delaney, Amer-
Supply, Indianapolis, Lord
Kathman, Sports, Solar, Green,
and, Moore.



Douglas D F

David A. Stewart Co.
Los Angeles, Calif.

POWER IS UP FOR the DF long range boat in the Wright Collection.

Equipment by Armstrong Co.
Fennell, Larkin, Pittsburgh
Pak, Seaworld, Holbrook, Cr.
Crisis, Michigan, the Post Office
Fisher, Seaworld, Hoffman, Tol-
dard, Boston, Cleveland, Mass.
White, Goodrich, Billings &
Spencer, Grand, World, Wash-
ington, Florida, Ship, Nat. Park,
General, Calk, Tokyo, New
Supply, Loughborough, Lond.
Kilham, Sperry, Solar, Cavi-
and, Mexico.



Fairchild 45

Forrestal, William, Jan.
Barnstable, MA.

Emerson (1804-1882), appointed in the March 1845 period, converted across-sections for live persons. Power plant is the 284-lp. Wright, Whitford, 1882.

[illegible]

A.924.70

Presented At: 1978, 1st
International Conference on
Hypertension, Vol.

THE LAMBDA A92-V Amplifier has been sold for more than a number of foreign countries. Power plug is the 754-hp Ford & Whitney Motor or the Toyota-Cummins engine.

Equipment: A. Mendenhall Company or American Sawmill, Ltd., London; Pittsburgh Plate Glass; Berry Brothers; Pilzer; Norma Hoffmann Roasting; Cleveland Cookhouse; Fink-Natural; R.C.A.; Wellman; Blomex; and Pie-Pace.





Seabird

Fluorocarbon, Inc.
Bristol, Pa.

FRANCIS CONSTRUCTION WORLD is being retained to prepare the site S-8a. Bid for the International Arena at Shaw. The new model, powered with the 285-hp Jacobs L-5 engine, includes many improvements. Principal structural difference is the elimination of all welded steel tubing from the hull structure and sub-decking stainless steel.

Replacement by Goodrich P-1000, Bendix and Telesis S. H.

**JF-2**

Garrett, Russell Engineering Corp.
Farmersville, N. Y.

For advanced ERYLITE members involving photography and oil services, Graciosa offers the J12, central float type amphibian, used extensively by the Coast Guard. Register is the 275-hp. Mercedes G6000.

Equipment by Goodrich, Bendix, Hamilton Standard, Edgemoor and Pittsburgh Plate Glass, Rocking, Berry, Southern, Bendix-Summersell and Aluminex Company, of America.



Three
View
Drawings
Not
Released

J2F-1

Grumman Aircraft Engineering Corp.
Trenton, N. J. 08618

Its active function at the present time is the ZIP-1 generator, supplied by General Motors with seats for two to four persons; this model is powered by the Wright Cyclone (275 hp at 2400 ft.) engine. It is available in two versions.

Equipment by Aluminex Company in America, Switzerland, Pittsburgh Plate Glass, Davy Lanthorn, Bostling, Bostling and Cochrane.

F3F-1, F3F-2

Grumman Aircraft Engineering Corp.
Bethesda, Md., U. S. A.

For F30-1 and F30-2 models are two Hughes-Blanton pot stills with the 684-gal. Prok & Whitney Wasp Junior and 790-gal. Wright Cyclone engines respectively. Both are designed to carry 2-100-lb. boats. The F30-2 is available for export.

Supplied by: *Aluminum Company of America, New York; Pittsburgh Plate Glass; Berry Brothers; Rocking Boats and Confections.*

[illegible]

Type of operation	B-rights		B-responses		Aero. Flt. (F-1)				Wings				Landing gear				Passenger on board
	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight	Time in flight			
1. Take-off and climb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2. Cruise	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3. Descent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4. Landing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
5. Taxi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
6. Turn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
7. Climb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
8. Descent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
9. Landing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
10. Taxi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
11. Turn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
12. Climb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
13. Descent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
14. Landing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15. Taxi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
16. Turn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
17. Climb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
18. Descent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
19. Landing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
20. Taxi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
21. Turn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
22. Climb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

FF-1

Raytheon Aircraft Engineering Corp.
Pompano Beach, L. L. W. F.

More recently, at the long list of May Fishery Bank by Gloucester is the PF-1 a two-sailer powered by the Wright System (75 hp at 3,000 \dot{A}). The PF-1 is a ketchon with retractable landing gear. It has been released for export.

Equipment by: *Aluminum*
Components of America, San
Francisco; Pittsburgh Plate Glass,
Pittsburgh; Brothers Kautling, San
Diego; and Goodrich.



F2F-1

George David Engelstein, Gen.
Furnessville, L. I., N. Y.

Powered with the 600hp (7,800 ft.) Pratt & Whitney Wasp Junior, the Grumman F2H-1 single engine fighter is rated a high speed of 780 mph and a cruising speed of 310 mph, both at 7,800 ft. It is valued for export.

Equipment by Almont
Company of America, Inc.,
Pittsburgh Pipe Glass
Barn, Bostons, Rieding, Ber-
dix, and Goodrich



231

GROUNDS RESEARCH ENGINEERING CORP.

INTRODUCTION of the eight place G-21 amphibious converted a highly successful delta into the commercial amphibious market by Grumman. The G-21 is a control hull type of monohull powered by two Pratt & Whitney, 3000, engine engines.

Represented by American
Companies of American Home-
work, Pittsburgh Plate Glass,
Ferry Brothers Roofing, Inc.,
and Gerdau.



References

Quelques lignes (54)

Two new versions of the vane model like *Corvus Aeneus* differ mainly in power plant. Model One uses the 90-hp. Polaris and Model Two the 126-hp. model.

Equipment by Aluminum Company of America, Seaforth, Ltd., Laidlaw, Riden & Hunt, Berry Brothers and Denton, Placer Scripts and Norm-Hoffmann, Goodrich, Gazco, Shurt Devices, E.C.A., Pioneer, A.C. Load and Shaver.





PH-1, PH-2

Mail: Alameda Aircraft Corp.
Bristol, Pa.

Among the models available for export or domestic use manufactured by the Hill Aluminum Arsonix Corp. are the PH-1 and PH-2. These units are used extensively for Coast Guard and marine work at sea. Both models are powered with Wright Cyclone engines. An optional version of the PH-2 is available with longer range than the normal model. The company also produces large flying boats for the Marine.



Hawks HM-1

Harris, Abbott Co., Bedford, Conn.

Holl PH.1

Matt Atkinson, Everett Case, Brian Fox



Jones S-125

James Albert Cox
Baltimore, Md.

The D-60 is a 170-hp model by John Deere. Vermeer Corp. It is powered by the Mercedes-Benz diesel engine, providing a top speed of 36.8 mph and a cruising speed of 14.8 mph at sea level. The Model S-62 has a reach of about nine ft, double standards with folding rearwing and a steel and plywood wing.

Engineered by Minnesota Company of American Kermel-Hoffman, Palmer and Hennrich.

**Jones D-25**

James Marshall Cary
Schuylkill, N. Y.

[illegible][illegible][illegible]

DGR-8, 9, 11

Brewer Aircraft Corp.
Classen III

Future studies of *Acrida* design and dimensions concerning the DGA series, lowest in price and power is the DGA 9.9 with 280-hp Jacobs engine and a cruising speed of 185 mph at 7,000 ft. The next step is the DGA 8 with the 420 hp Wright Divisive and which cruises at 187 mph at 12,000 ft. Highest powered is the Divisive with 450-hp Pratt & Whitney Ramjet Junior which cruises 201 mph at 9,000 feet.



Johansen JA-2

Johnston, Nancy G.
Los Angeles, Calif.

A MAJOR ADDITION to the light airplane group is the Johnsen JA-2, powered by the A-40 Continental engine. The JA-2 has a top speed of 90 mph and a cruising speed of 85 mph according to the manufacturer's specifications. An optional Type certificate on the JA-2 is pending.

Equipment by Wellington
Sons Marvin Williams. Good
year, Air Associates Pyrene
and Gravel.



Kellott YC-1A

Hathell Autopipe Corp.
Philadelphia, Pa.

Only a limited on-road performance prediction is this company's claim as it is the Kariya VG-15. This model is available in only for the company and domestic markets. Like its predecessor, the Kariya 15 is powered by the Isuzu 220-hp engine. The VG-15 is found in documents and weight is the Kariya 15, high speed is 125 mph and cruising speed 800 mph is not listed. Gross weight is 2200 lb and dry weight 600 lb.





Martin 130

The Glenn L. Martin Company
Baltimore, Md.

Continued in regular service across the Pacific the Martin 130 (Crew Chief) has built up an enviable record for coast flying. Powered with four Pratt & Whitney Wasp developing a total of 3220 hp. at 4000 ft., the Model 130 cruises at 150 mph at 30,000 ft.

Equipped by Bendix, General Electric, Kearney, Whitten, Sperry, Kolls, Hamilton Standard, Eads, Dyle National, Sperry, and Armstrong Company.

Martin 136

The Glenn L. Martin Company
Baltimore, Md.

A lower water flying boat capable of carrying unusually large payload over long ocean flights, the Martin 136 is an enlarged and improved version of the Model 130. Most striking difference is the new step in the bow hull and high aspect ratio wing. Four Wright Cyclones of the G-2 Series operate the power plant. Capacity for 48 passengers or 26 sleeping berths may be provided. Gross weight is 60,000 lb.



110-Special

Monogram Corporation
Beltsville, Md.

For performance during high performance class that of the De Luce Model, Monogram offers the 110-Special powered by the 100 hp Warner engine. High speed of the 110 is 185 mph at sea level.

Equipped by Sweeney, Hughes, La Prade, Colford, Berry Brothers, Rocking, General Tire, Goodrich, Eberhart, Hatch, Gossens, S.C.A., Conroy, Superior, Aircraft Control, General Fire Truck, Hamilton Standard and H&H.

Twin Monocoque

Monogram Corporation
Beltsville, Md.

A 4.5 place twin-engine biplane, the Twin Monocoque offers possibilities for border line service, charter, etc. Two 90 hp Lycoming engines are used.

Equipped by Sweeney, Hughes, Pendleton, Platt, Cox, Berry Brothers, H&H, Rocking, Monocoque, Goodrich, Gossens, East Aircraft Control, General Fire Truck, Hamilton Standard, Eberhart and Reading (Bates).



Manufacturer	Description or Model No.	General				Power Plant										Performance																																																																																																																																																																																																																																																																																											
		ATC	Year	Eng.	Horsepower	Type	Altitude	Fuel	Weight (lbs)	Cooling	Oil Capacity (gal)	Oil Pressure (psi)	Oil Temp (°F)	Oil Level	Altitude	Speed (mph)	Rate of Climb (ft/min)	Time to Climb (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude (min)	Time to Altitude 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Weight	Performance	Arm. eq. (lb.)				Wings				Landing Gear				Fuel tank			
		Wing	Engine	Radio	Radio	Wing	Engine	Radio	Radio	Wing	Engine	Radio	Radio	Wing	Engine	Radio	Radio
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000



Z1, Z2, Z3

Miller Aircraft Corp.
Springfield, Mass.

Three models of the Zeta, designed by Harold Miller and offered by Miller Aircraft. The Zeta series are identical with the difference being in engine installation. Three plans are the Monocoque 90 hp, 125 hp, and 150 hp engines. High speed varies from 125 to 160 m.p.h.

Equipped by Sweeney, Hughes, Sperry, Kolls, Hamilton Standard and H&H.

90A, 90W

Monogram Corporation
Beltsville, Md.

Two models of the Monocoque 90 series are offered. The De Luce 90A has a 90 hp. Lycoming engine, while the De Luce 90W has the 125 hp. Warner power plant.

Equipped by Sweeney, Hughes, La Prade, Colford, Berry Brothers, Rocking, General Tire, Goodrich, Eberhart, Hatch, Gossens, S.C.A., Conroy, Superior, Aircraft Control, General Fire Truck, Hamilton Standard and H&H.



NA-16-1, 2, & 4

North American Aviation, Inc.
Dayton, Ohio

Two Pratt & Whitney and one Wright Model ranged from 440-580 hp are available.

Equipped by Monogram Corporation, Sweeney, Sweeney, Sweeney, Thompson & Allison, New Department of Defense, North American Aviation, Rocking, H&H, White, Cleveland, Prouty, Goodrich, Goodrich, Goodrich, Adams & Westlake, S.C.A., Douglas, Briggs & Brown, Fowler, Winton, Sperry, Kollsman and Lear.

NA-16-K

North American Aviation, Inc.
Dayton, Ohio

The NA-16-K is designed as a high performance bomber with retractable gear and 840 hp Wright Cyclone engine.

Equipped by Monogram Corporation, Sweeney, Sweeney, Sweeney, Thompson & Allison, New Department of Defense, North American Aviation, Rocking, H&H, White, Cleveland, Prouty, Goodrich, Goodrich, Goodrich, Adams & Westlake, S.C.A., Douglas, Briggs & Brown, Fowler, Winton, Sperry, Kollsman and Lear.





North American NA-16-5
North American Aviation, Inc., Inglewood, Calif.

Dragon Bomber

North American Division, Inc., Jefferson, Calif.



M-12W, M-12

Gray Anson Corp.
Waltham, Mass.

WILLIAM ONG, who has been active in the industry for many years, has branched out to form his own pump manufacturing, a low-cost monophase available with either the 145 hp Warner or 158 hp Mirafloz engine. The M-32W and M-32 are four phase pumps. Equipment by Sumitomo, Hightest, Garry Brothers, Poline Production, Hydraulic, General, Van Dusen Mfg., Grimes, B.C.A., Kalkreuth and Lord.



Zephyr

Particulate Aerosol
Emission CEs, Mo.

Powertrain contribution to the light phase field in the Commercial powered Zipigs. Accessories include air-charge indicators, alternator, oil temperature and pressure gauges, pump, tachometer, dual controls, adjustable stainless control, battery and Spanish leather upholstery, parachute seat roller bearing wheels, five emergency and safety belt buckles, tail wheel, emergency lights, and dual ignition are optional.



70, 90

Friendship Aircraft Corp.
Evanston, Ill., Mo.

Interiors are in the 1930 Model 70 and 90 include velour-covered cushions, tufted leather seats and armrests, tufted leather-trimmed steering wheel, padded leather door, new combination exhaust and speed rings, power-mirror wheel, etc. The Model 70 is powered by the 4.9-liter 70 engine and the Model 90 by the Warner Scarab 90 hp engine. Both models are available in the Lane variations depending on equipment.

[illegible]

Piper J-2, J-3

Piper, Kenneth C.
Sack House, Pa.

Encompass the lineups J-2 Triant Piper Aircraft offers the new J-5 Sport with many detailed refinements. Both models are available as complete with full-time installations.

Equipment by: Alcoa Inc., Aluminex Company of America, Flyback, Summer-R, Wapley, Randolph Building, Piper, Goodrich Hayes, Gilson, Aeromarine, Washburn, U S Gauge, Colwell Corp., Pyrene, Air Accessories, and Aero Supply Mfg. Corp.



Skeylark

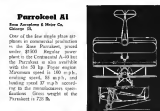
Peptide Array C
Glycine, CytG

Active or semi-active production the Puget Skylark is available in order for the foreign or domestic market. Powered with the 125 by Warner engine the Skylark has a high speed of 129 mph. and cruises at 123 mph according to the manufacturer. Equipment by Atlantic Company, Somerville, Berry Brothers, Fairlie, American Steel & Wire, Puget Gunboats, Autolite, Grinnell, Kollman, Pioneer, Lund and Pyrene.

**Phillips**

Phillips Ardisson, C.
Los Angeles, Calif.

Known formerly as the Aero Star 1-1, the Phledge 1-1 is now manufactured by the Phledge Aviation Company. The 1-1 is an all metal monoplane for two persons. It is designed along transport lines to bring to the private pilot many of the features accepted as standard in large all metal trainers. Power plant is the Moenaco 125 hp engine. Maximum speed at sea level is 140 mph. A.T.C. is optional.

**Parakeet AI**

Boysen-Broadbent & Major Co.
Chicago, Ill.

One of the few single glass airplanes in commercial production is the Rane Parajet, priced under \$1800. Regular passenger is the Continental A-40 kit; the Parajet is also available with the 50 hp. Popar engine. Maximum speed is 160 mph, cruising speed, 85 mph, and landing speed 37 mph according to the manufacturer's specifications. Gross weight of the Parajet is 720 lb.





Sportster

Seversky Aircraft Corp.,
Newark, N. J.

Light Sportster models are offered. The 1000 and 800-L have engines 70 and 90 horsepower and the 900 the Warner 90 hp. Equipment by Mustang Company of America, Standard Tilling Co., Thomson, de Pont, Cooke, Fisher, New Air Transport Equipment, Goodrich, Kearsley, Grimes, R.C.A., Levy, Aeromarine Pioneer Kolben, Buffalo, Fokker, Flottway and MacWhirter.

Speedster

Seversky Aircraft Corp.,
Newark, N. J.

Two Sportsters are offered. The 8000 M has the 125 hp Mustang and the 8000 S the 160 hp Mustang. Equipment by Mustang Company of America, Standard Tilling Co., Thomson, de Pont, Cooke, Fisher, New Air Transport Equipment, Goodrich, Kearsley, Grimes, R.C.A., Levy, Aeromarine Pioneer Kolben, Buffalo, Fokker, Flottway and MacWhirter.



2 PA

Seversky Aircraft Corp.,
Newark, N. J.

First Seversky design to be constructed was the tandem high performance airplane which is still today many years ahead. Forward with the 800 hp Wright Cyclone engine the 2 PA has a top speed of 200 mph at 7,000 ft. Equipment by Bendix, Goodrich, Hartzel, Standard, Tilling, de Pont, Cooke, Fisher, New Air Transport Equipment, Goodrich, Kearsley, Grimes, R.C.A., Levy, Aeromarine Pioneer Kolben, Buffalo, Fokker, Flottway and MacWhirter.

Executive

Seversky Aircraft Corp.,
Newark, N. J.

Remains unique in the P-35. Forward Thrust the Executive is designed as a three-place day-cruiser for two passengers in the rear and the pilot's cockpit. A more detailed description appeared in the January 1935 issue of Aviation.



Manufacturer	General										Price										Performance									
	Model	Engine	Power	Speed	Altitude	Range	Endurance	Weight	Capacity	Notes	Model	Engine	Power	Speed	Altitude	Range	Endurance	Weight	Capacity	Notes	Model	Engine	Power	Speed	Altitude	Range	Endurance	Weight	Capacity	Notes
Seversky Aircraft Corp.	1000	Warner 70	70	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	800-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	900	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	

Manufacturer	General										Price										Performance									
	Model	Engine	Power	Speed	Altitude	Range	Endurance	Weight	Capacity	Notes	Model	Engine	Power	Speed	Altitude	Range	Endurance	Weight	Capacity	Notes	Model	Engine	Power	Speed	Altitude	Range	Endurance	Weight	Capacity	Notes
Seversky Aircraft Corp.	1000	Warner 70	70	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	800-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	900	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	
Seversky Aircraft Corp.	1000-L	Warner 90	90	100	10,000	1,000	1.00	1,000	2		8000	Mustang 125	125	125	12,000	1,000	1.00	1,000	2		8000	Mustang 160	160	160	12,000	1,000	1.00	1,000	2	



Ryan ST

Ryan Aircraft Co.,
San Diego, Calif.

The standard Ryan ST is available in three models equipped with Mustang engines. Model ST has the 90 hp engine, ST-A the 125 hp unit, and the ST-B the 150 hp model. Equipment by Mustang Company of America, Standard Tilling Co., Thomson, de Pont, Cooke, Fisher, New Air Transport Equipment, Goodrich, Kearsley, Grimes, R.C.A., Levy, Aeromarine Pioneer Kolben, Buffalo, Fokker, Flottway and MacWhirter.

Ryan SC

Ryan Aircraft Co.,
San Diego, Calif.

Two versions in the new Ryan Cubes (SC) are available. One the SC-1145 is powered by the 140 hp Warner engine. The other the SC-1156 uses the 150 hp Mustang power plant. Equipment by Mustang Company of America, Standard Tilling Co., Thomson, de Pont, Cooke, Fisher, New Air Transport Equipment, Goodrich, Kearsley, Grimes, R.C.A., Levy, Aeromarine Pioneer Kolben, Buffalo, Fokker, Flottway and MacWhirter.



Seversky P-35

Seversky Aircraft Corp.,
Newark, N. J.

Hell XFM-1

Hell Aircraft Corp.,
Buffalo, N. Y.

Convoy Fighter

Seversky Aircraft Corp.,
Newark, N. J.

Designed as a day or advanced night, observation, attack or pursuit plane as a light bomber as well as a convoy fighter. This model is available with engines ranging from 400-1200 hp without structural changes. Interchangeable wing panels accomplish the variation in area from one model to another. Divided is also variable. Area range from 28-384 sq ft. New detailed description appeared in the January 1935 issue of Aviation.





S-1B

Security Aircraft Corp.
Denver, Colo.

DESIGNED BY W. E. KUBER, the latest model Security S-1B is probably the only folding wing aircraft qualified in this country. Power plant for the S-1B is the Security 5-5 engine which develops 122 hp at sea level. The two place, low wing monoplane weighs 1775 lb gross and has a top speed of 139 mph.

Equipped by Aircraft Products, Tech Comp, Get Res, Security, and Zyrus.



S-42

Sikorsky Div., Bell Helicopter Co.,
Hempstead, Conn.

POWERED BY 4 Pratt & Whitney Hornets, the S-42 is available for long and domestic markets. Equipped by Aluminex Company, Seaworth, Seaworth 503-B, L. C. Chase, M. Seaworth, Seaworth & Borman, Timbrough, Pike Glass, Merwin, de Paul, Palmer, Nissen-Hoffmann, Romberg, Solas, Nissen Industries, General Electric, Kalmus, Spry, Pinner, Lewis Engineering, Lord and Walker Kilde.



Executive

Spencer Aircraft Co.,
Tulsa, Okla.

A LATER VERSION OF Spartan Executives have been sold since the company made this production on the latest model. Engine is the Pratt & Whitney Wasp Junior. Gross weight of the Executive is 900 lb.

Equipped by Aluminex Company of America, Shelby, Louisiana, Robin & Hays, Sherwin-Williams, Palmer, McWhirter, Cleveland Pneumatic, Goodhue, Graham, Pinner, Solor, Lord and Lee.



Zeus

Spencer Aircraft Co.,
Tulsa, Okla.

FOR MILITARY SERVICE the Spartan Company has developed the "Zeus" in two models, SW and SW. The SW is powered by 80 550 hp. Pratt & Whitney Wasp and the SW by the 600 hp Wasp Junior.

Equipped by Aluminex Company of America, Shelby, Louisiana, Robin & Hays, Sherwin-Williams, Palmer, McWhirter, Cleveland Pneumatic, Goodhue, Graham, Pinner, Solor, Lord and Lee.



Models shown	General	Power Plant	Performance
Security Aircraft Corp. S-1B	1-1100	1-1100	1-1100
Sikorsky Div. Bell Helicopter Co. XP5S-1	1-1100	1-1100	1-1100
Executive	1-1100	1-1100	1-1100
Zeus	1-1100	1-1100	1-1100

Weights	Dimensions	Arm (lb.)	Range	Speed	Altitude	Endurance	Landings	Accidents
1-1100	1-1100	1-1100	1-1100	1-1100	1-1100	1-1100	1-1100	1-1100
1-1100	1-1100	1-1100	1-1100	1-1100	1-1100	1-1100	1-1100	1-1100
1-1100	1-1100	1-1100	1-1100	1-1100	1-1100	1-1100	1-1100	1-1100



S-43

Sikorsky Div., Bell Helicopter Co.,
Hempstead, Conn.

THE S-43 (XP5S-43) is a new production and is one of the most modern of the world. Equipped by Aluminex Company, Seaworth, Seaworth 503-B, L. C. Chase, M. Seaworth, Seaworth & Borman, Timbrough, Pike Glass, Merwin, de Paul, Palmer, Nissen-Hoffmann, Romberg, Solas, Nissen Industries, General Electric, Kalmus, Spry, Pinner, Lewis Engineering, Lord and Walker Kilde.

XP5S-1

Sikorsky Div., Bell Helicopter Co.,
Hempstead, Conn.

IN RECENT MONTHS the technical philosophy of the U. S. Navy has been built around the large flying boat designed for long range operations with cross section sufficiently comfortable for long experimental operations, and complete conversion. The Sikorsky XP5S-1 shows very much in general by four twin wing engines.

Both Sikorsky and General Electric have built both of this type.



Stearman 73,736

Spencer Aircraft Co.,
Tulsa, Okla.

THE 73 MODEL ARE OPEN biplanes powered by the 225 hp Lycoming engine. They have been reported to a number of foreign countries.

Equipped by Aluminex Company of America, Shelby, Louisiana, Robin & Hays, Sherwin-Williams, Palmer, McWhirter, Cleveland Pneumatic, Goodhue, Graham, Pinner, Solor, Lord and Lee.

Stearman 76

Spencer Aircraft Co.,
Tulsa, Okla.

THE STEARMAN 76 MODEL ARE the Pratt & Whitney Wasp Junior or Wright Whirlwind engines. Many have been reported.

Equipped by Aluminex Company of America, Shelby, Louisiana, Robin & Hays, Sherwin-Williams, Palmer, McWhirter, Cleveland Pneumatic, Goodhue, Graham, Pinner, Solor, Lord and Lee.





Parameters γ were calculated on the V-91 and V-97 models, which in themselves had no construction cost difference in power plants and performance. The V-97 is powered by the Pratt & Whitney F404 engine (700 hp at 3000 R) and has a high speed of 176 mph (8000 ft). The V-97 uses the F70 hp Pratt & Whitney Hornet (700 hp at 6000 ft). Its high speed is 203 mph at 6000 ft.

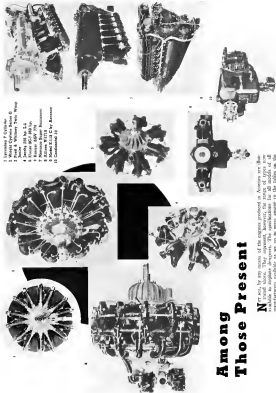
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In active production at the present time is the V-136 two-stroke monoplane powered by the 750 hp. Pratt & Whitney Map-Jet engine. The V-136 model weighs 6000 lb. gross. Performance, owner figures and design data are available only on request.

Proposals are invited for building and fabric and wing are also wanted along with metal and fabric co-cure.

Three View Drawings Not Released





**Among
Those Present**

Not only, by any means, of the engines produced in America are illustrated above. They represent, however, the range of types now available to implant designers. The specifications for all models of all manufacturers available; as we go to press appear in the tables on the following two pages.

Americam English Sacrifications

CONCLUSIONS The results of this study suggest that the use of a single, standardized, and validated questionnaire is a feasible and reliable method for assessing the prevalence of self-reported chronic diseases in a community-based population. The prevalence of self-reported chronic diseases was higher in the elderly population compared to the younger population. The prevalence of self-reported chronic diseases was higher in the female population compared to the male population. The prevalence of self-reported chronic diseases was higher in the urban population compared to the rural population. The prevalence of self-reported chronic diseases was higher in the population with a higher level of education compared to the population with a lower level of education. The prevalence of self-reported chronic diseases was higher in the population with a higher income compared to the population with a lower income. The prevalence of self-reported chronic diseases was higher in the population with a higher level of health insurance coverage compared to the population with a lower level of health insurance coverage. The prevalence of self-reported chronic diseases was higher in the population with a higher level of health literacy compared to the population with a lower level of health literacy. The prevalence of self-reported chronic diseases was higher in the population with a higher level of social support compared to the population with a lower level of social support. The prevalence of self-reported chronic diseases was higher in the population with a higher level of physical activity compared to the population with a lower level of physical activity. The prevalence of self-reported chronic diseases was higher in the population with a higher level of diet quality compared to the population with a lower level of diet quality. The prevalence of self-reported chronic diseases was higher in the population with a higher level of smoking status compared to the population with a lower level of smoking status. The prevalence of self-reported chronic diseases was higher in the population with a higher level of alcohol consumption compared to the population with a lower level of alcohol consumption. The prevalence of self-reported chronic diseases was higher in the population with a higher level of mental health status compared to the population with a lower level of mental health status. The prevalence of self-reported chronic diseases was higher in the population with a higher level of overall health status compared to the population with a lower level of overall health status.

Category	Sub-category	2014-15		2015-16		2016-17		2017-18		2018-19		2019-20		2020-21		2021-22		2022-23		2023-24		2024-25		2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		2035-36		2036-37		2037-38		2038-39		2039-40		2040-41		2041-42		2042-43		2043-44		2044-45		2045-46		2046-47		2047-48		2048-49		2049-50		2050-51		2051-52		2052-53		2053-54		2054-55		2055-56		2056-57		2057-58		2058-59		2059-60		2060-61		2061-62		2062-63		2063-64		2064-65		2065-66		2066-67		2067-68		2068-69		2069-70		2070-71		2071-72		2072-73		2073-74		2074-75		2075-76		2076-77		2077-78		2078-79		2079-80		2080-81		2081-82		2082-83		2083-84		2084-85		2085-86		2086-87		2087-88		2088-89		2089-90		2090-91		2091-92		2092-93		2093-94		2094-95		2095-96		2096-97		2097-98		2098-99		2099-00		2100-01		2101-02		2102-03		2103-04		2104-05		2105-06		2106-07		2107-08		2108-09		2109-10		2110-11		2111-12		2112-13		2113-14		2114-15		2115-16		2116-17		2117-18		2118-19		2119-20		2120-21		2121-22		2122-23		2123-24		2124-25		2125-26		2126-27		2127-28		2128-29		2129-30		2130-31		2131-32		2132-33		2133-34		2134-35		2135-36		2136-37		2137-38		2138-39		2139-40		2140-41		2141-42		2142-43		2143-44		2144-45		2145-46		2146-47		2147-48		2148-49		2149-50		2150-51		2151-52		2152-53		2153-54		2154-55		2155-56		2156-57		2157-58		2158-59		2159-60		2160-61		2161-62		2162-63		2163-64		2164-65		2165-66		2166-67		2167-68		2168-69		2169-70		2170-71		2171-72		2172-73		2173-74		2174-75		2175-76		2176-77		2177-78		2178-79		2179-80		2180-81		2181-82		2182-83		2183-84		2184-85		2185-86		2186-87		2187-88		2188-89		2189-90		2190-91		2191-92		2192-93		2193-94		2194-95		2195-96		2196-97		2197-98		2198-99		2199-00		2200-01		2201-02		2202-03		2203-04		2204-05		2205-06		2206-07		2207-08		2208-09		2209-10		2210-11		2211-12		2212-13		2213-14		2214-15		2215-16		2216-17		2217-18		2218-19		2219-20		2220-21		2221-22		2222-23		2223-24		2224-25		2225-26		2226-27		2227-28		2228-29		2229-30		2230-31		2231-32		2232-33		2233-34		2234-35		2235-36		2236-37		2237-38		2238-39		2239-40		2240-41		2241-42		2242-43		2243-44		2244-45		2245-46		2246-47		2247-48		2248-49		2249-50		2250-51		2251-52		2252-53		2253-54		2254-55		2255-56		2256-57		2257-58		2258-59		2259-60		2260-61		2261-62		2262-63		2263-64		2264-65		2265-66		2266-67		2267-68		2268-69		2269-70		2270-71		2271-72		2272-73		2273-74		2274-75		2275-76		2276-77		2277-78		2278-79		2279-80		2280-81		2281-82		2282-83		2283-84		2284-85		2285-86		2286-87		2287-88		2288-89		2289-90		2290-91		2291-92		2292-93		2293-94		2294-95		2295-96		2296-97		2297-98		2298-99		2299-00		2300-01		2301-02		2302-03		2303-04		2304-05		2305-06		2306-07		2307-08		2308-09		2309-10		2310-11		2311-12		2312-13		2313-14		2314-15		2315-16		2316-17		2317-18		2318-19		2319-20		2320-21		2321-22		2322-23		2323-24		2324-25		2325-26		2326-27		2327-28		2328-29		2329-30		2330-31		2331-32		2332-33		2333-34		2334-35		2335-36		2336-37		2337-38		2338-39		2339-40		2340-41		2341-42		2342-43		2343-44		2344-45		2345-46		2346-47		2347-48		2348-49		2349-50		2350-51		2351-52		2352-53		2353-54		2354-55		2355-56		2356-57		2357-58		2358-59		2359-60		2360-61		2361-62		2362-63		2363-64		2364-65		2365-66		2366-67		2367-68		2368-69		2369-70		2370-71		2371-72		2372-73		2373-74		2374-75		2375-76		2376-77		2377-78		2378-79		2379-80		2380-81		2381-82		2382-83		2383-84		2384-85		2385-86		2386-87		2387-88		2388-89		2389-90		2390-91		2391-92		2392-93		2393-94		2394-95		2395-96		2396-97		2397-98		2398-99		2399-00		2400-01		2401-02		2402-03		2403-04		2404-05		2405-06		2406-07		2407-08		2408-09		2409-10		2410-11		2411-12		2412-13		2413-14		2414-15		2415-16		2416-17		2417-18		2418-19		2419-20		2420-21		2421-22		2422-23		2423-24		2424-25		2425-26		2426-27		2427-28		2428-29		2429-30		2430-31		2431-32		2432-33		2433-34		2434-35		2435-36		2436-37		2437-38		2438-39		2439-40		2440-41		2441-42		2442-43		2443-44		2444-45		2445-46		2446-47		2447-48		2448-49		2449-50		2450-51		2451-52		2452-53		2453-54		2454-55		2455-56		2456-57		2457-58		2458-59		2459-60		2460-61		2461-62		2462-63		2463-64		2464-65		2465-66		2466-67		2467-68		2468-69		2469-70		2470-71		2471-72		2472-73		2473-74		2474-75		2475-76		2476-77		2477-78		2478-79		2479-80		2480-81		2481-82		2482-83		2483-84		2484-85		2485-86		2486-87		2487-88		2488-89		2489-90		2490-91		2491-92		2492-93		2493-94		2494-95		2495-96		2496-97		2497-98		2498-99		2499-00		2500-01		2501-02		2502-03		2503-04		2504-05		2505-06		2506-07		2507-08		2508-09		2509-10		2510-11		2511-12		2512-13		2513-14		2514-15		2515-16		2516-17		2517-18		2518-19		2519-20		2520-21		2521-22		2522-23		2523-24		2524-25		2525-26		2526-27		2527-28		2528-29		2529-30		2530-31		2531-32		2532-33		2533-34		2534-35		2535-36		2536-37		2537-38		2538-39		2539-40		2540-41		2541-42		2542-43		2543-44		2544-45		2545-46		2546-47		2547-48		2548-49		2549-50		2550-51		2551-52		2552-53		2553-54		2554-55		2555-56		2556-57		2557-58		2558-59		2559-60		2560-61		2561-62		2562-63		2563-64		2564-65		2565-66		2566-67		2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AS OTHERS FLY IT

A Birdseye-View of Aviation Abroad

How big are European Air Forces? That depends on your politics

The French have the wind up currently, about the air armaments of potential enemies in a way that this big editor European agency found worthy to, when the government's program in increasing the French armament industry was under fire. M. Pierre Cot, Minister of Air, stated at the Senate with the statement that France had no air strength second only to that of Russia. The French light bombers gained several a little and state back with claims that (1) France had by no means the most powerful air force in the world, (2) the French industry was falling well behind in the program to give France 1,500 first line planes by 1934, (3) The French industry had ordered only 28 service airplanes in June, 22 in August, 25 in September, 17 in October and 19 in November. (4) The French light bombers have not yet met 150 units each month and the Germans 230. (5) What was more, the French in their new getting bombers they could do only 110 mph compared with German and Italian deliveries that could do 200-210 m.p.h., French fighters could only make 200 mph compared with the "new" 300 mph. M. Cot came back with the statement that the price was not so high for work of right,

That the British were spending about three to four times as much on new equipment. That French types were not as good as German or British types. After the law passed was all over the Senate had passed a budget of \$75,000,000 (France's 1934-1935) for quantity produced aircraft. The strength of the air was now found as 1,500 officers and 140,000 men. In the race to get the money down for more military planes, funds for the development of North Atlantic countries were cut from \$25,000,000 (France) to \$6,000,000 (France) ...

Now's our for the book. The French armament plan seems to be kept centered in taking care of the air craft work and the most famous engine factory. But the Hispania plane and the German-British engine plants just wouldn't play market. They were entirely independent financially. They built new wings and engine delivery orders. And they were doing a different export business. For the Ministry has been changing the state of exporting some engine factories. They, also, most frequently mentioned are Pratt and Whitney and Wright. Also, the French government has recently taken

delivery of ten Japsa Deltas from—of all places—Germany.

Across the Channel movement is still by getting planes. At the end of the year the Scandinavian Air Force had 121 squadrons with 1,548 first-line aircraft equipped with 55 squadrons and 1,870 planes, very powerful in fact. And there were 29 full squadrons service and the equivalent of 59 squadrons in the Free Air Force with 517 first-line aircraft. And that's by no means all. Reliable word comes that the British air force driving ahead to get as many as 10,000 British planes in service as stored away in progress before they start using up on production in 1937.

The Germans and Italians, whom the French indicate reached with 5,000 first-line service planes between them, must also be well into the production stage if any figures their undoubted record of production over the past three years.

Our informed 10 (April) contemporary, C. S. Gray, has a lot to say on the past and present status in the great 1937 year's All the World's Aircraft and indicates that respectively with a better than even ratio over this year. He says Germany's planes equal in power and performance (though not in numbers) to those of Great Britain and the United States. He thinks the word of the Italian concept of Bomber would hardly have been possible without Italy's base in Spain. He doesn't think the Russians have much more if they have got a quality machine. If you get what it means



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HANDS ACROSS THE BORDER: Nine years ago the U. S. initiated its first agreement—a pact with Canada covering air navigation rules and peacefully in aerobics for airmen and airmen. Last month Canada sent three distinguished officials to confer in Washington over a memorandum of the pact and an agreement over aircraft rules and (some say) to start clearing over military questions in the two countries and Alaska. Who shows?

Left to right—Seated: R. T. Gordon, Assistant Postmaster General; Col. J. M. Johnston (U. S. A. Senior Deputy Minister of Transport); Horace Brough (U. S. A.—Bringing); H. E. Walsh, radio expert; Ronald MacDonald, Canadian Legation; Dr. J. Macdonald, Chief of Meteorology; U. S. Chief Counsel; Consul G. P. Edwards, Chief of Air Services; J. A. Wilson, Controller of Civil Aviation; G. Manning, Representative of West Services; and Wing Commander A. T. Conley, in charge of Air Regulations.



5

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AVIATION
February 1935

NO SAFER THAN ITS TUBING



"Ohio Special Non-Oxidized" Aircraft Tubing is now standard in the round and cross-section surfaces as well as special shapes.

Additional Factor of Safety
in Aircraft Construction . . .
is provided by

CONTROLLED ATMOSPHERE ANNEALING and NORMALIZING

Through the addition of the latest type of Controlled Atmosphere Annealing and Normalizing equipment, "Ohio" is now prepared to supply the aircraft industry with tubing having a non-oxidized finish.

Thus, severe pickling with its consequent pitting action is eliminated; decarburization is definitely controlled; uniform grain structure and physicals are assured—all extremely important factors contributing to added confidence on the part of those vitally concerned in the increased safety of modern air transportation.

Note actual photographs below showing the smooth finished surface appearance of this modern "Non-Oxidized" tubing as compared to the black oxidized finish formerly considered standard.



SPECIFY "OHIO SPECIAL
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The OHIO SEAMLESS TUBE Co.
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23

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ORCA AIRCRAFT CO., Worcester, Mass.
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(Continued on page 180)

Universal Preference Pioneer Instruments

Flight Panel

PIONEER INSTRUMENT COMPANY, INC. • 794 LEXINGTON AVENUE • BROOKLYN, N. Y.
A SUBSIDIARY OF THE BENDIS AVIATION CORPORATION

AVIATION
February, 1939
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*Model "100" is shown in the Portador engine and
Alphale Corp. Cruising speed 300 m. p. h. with
load of 4000 lbs. per passenger and 500 lbs. of
equipment fuel for 1000 miles. Mounted with
Ranger 6-410B p. geared and supercharged engine.*

RANGER AIRCRAFT ENGINES

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6 Cylinder in-line direct drive A.T.C.-367, 165
Horsepower at 2450 R.P.M.

RANGER V-770B-4

12 Cylinder Vee direct drive, A.T.C.-184, 305
Horsepower at 2300 R.P.M. 265 Horsepower
for take-off.

RANGER SGV-770B-5

12 Cylinder Vee geared and supercharged,
A.T.C.-185, 420 Horsepower at 2800 R.P.M. at
3,000 ft. altitude, 450 Horsepower for take-off
from sea level to 2,000 ft. altitude.

RANGER ENGINEERING CORPORATION
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BALANCED

FOR TAKING OFF . . . FOR CLIMBING . . . FOR CRUISING

For maximum cruising range with a minimum of fuel load, instant response to the throttle on take-off, and for economy when "idling" . . . your gas must be balanced!

Shell Aviation Gasolines, with octane ratings from the standard 73 to the sensational new "100" are just such fuels! Shell is balanced gasoline . . . balanced for

quicker starting, more "revs" during the take-off and climb, and lower fuel consumption in flight.

For complete information on any of Shell's line of aircraft petroleum products, write to the Shell Aviation Department, Shell Building, San Francisco; or Shell Building, St. Louis; or 50 West 50th St., New York.



AVIATION
February 1937
101



IS Here . . .



"SEE THE YOUNG FLY SOONER AND THE OLD FLY LONGER"

Again Waco takes the lead? Culmination of sixteen years of experience during which Waco has built far more airplanes than any other manufacturer—product of three years of designing, building, testing—the Waco "N" makes its bow.

Though characteristically Waco in its lines, the "N" is a tricycle. Without sacrificing comfort, speed or control in the air, it displays unique characteristics that satisfy the most ardent safety enthusiast. Landing, taking off and landing in level flight position, it affords full field visibility. With far greater and more

effective flap area than any other ship of comparable class, it glides nose-down at any angle, without attaining excessive speed. Increase from ground-loop and nose-over, the "N" may be landed cross-wind and stopped in its tracks with full brakes!

The Waco "N" carries four persons and 100 pounds of baggage at an altitude cruising speed of 140 miles an hour. It does not displace the luxurious "C" or the economical "S" cabin, but is an addition to the line. All Wacos are available on terms, through your local dealer.

THE WACO AIRCRAFT COMPANY, TRUY, OHIO



1935 MODEL C CABIN—Second cabin price. Roomy comfort for 4 or 5 persons. Also available as accessible freighter.



1935 MODEL S CABIN—Greater passenger-carrying value of any airplane. May be licensed for 4 or 5 persons, plus baggage.

SAFETY TO THE 'NTH DEGREE . . . LUXURIOUS COMFORT . . . OUTSTANDING PERFORMANCE



LYCOMING CONTROLLABLE PROPELLERS



ABOVE—Lycoming Propeller Installed on 280 H. P. Lycoming Engine in Stearman Release

RIGHT—One Hand Operating Integral Electric Propeller Control and Engine Throttle

BELOW—View Showing Leading Edge, Fins, and Trailing Edge of AVCO One Piece Hollow-Steel Blade

Featuring

- Maximum performance for each flight condition . . . Mechanical operation—gear train operated by rotation of propeller shaft . . . Positive electric control integral with engine throttle . . . Ease of installation . . . Low maintenance cost in service . . .

and

AVCO HOLLOW-STEEL PROPELLER BLADES

Suitable for use in all types of controllable and detachable blade propeller hubs, AVCO hollow-steel blades offer outstanding advantages in strength, durability and weight-saving.

Each AVCO hollow-steel blade is fabricated from a single homogeneous piece of seamless steel tubing.

The hollow steel construction and high physical properties permit a saving in overall blade weight of 25%.

Hollow-steel construction also affords AVCO blades greater rigidity under torsional and bending loads encountered particularly in large geared propellers.

Due to their surface hardness, AVCO steel blades are subject to a negligible amount of abrasion from rain, spray, cinders, etc. This feature contributes a remarkable reduction in operating and maintenance costs of propellers.

AVIATION MANUFACTURING CORPORATION
LYCOMING DIVISION
WILLIAMSPORT, PENNSYLVANIA

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THREE NEW LYCOMING ENGINES FOR 1938

50 Horsepower Light-Plane Engine



A four-cylinder, horizontally-opposed, air-cooled engine, the O-145 was designed specifically for the light planes of 1938. Based on a wealth of experience in the construction and operation of aircraft engines, and incorporating many outstanding features—the Lycoming O-145 is the best word in modern and economical power plants for the thousands who want to fly their own planes, such as the "Cub Sport."

210 Horsepower 7-Cylinder Engine Model R-530-D Series

The model R-530-D2 engine has a nominal rating of 190 H. P. and a 210 H. P. take-off rating, using 73 octane fuel. Completely automatic valve gear lubrication permits operators to fly 100 hours without maintenance attention to the valve mechanism. For primary trainers of the Stearman type.



260 Horsepower 9-Cylinder Engine Model R-680-D5

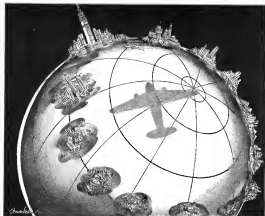


An improved model of the famous Lycoming R-680 Series, the R-680-D5 engine features automatic valve gear lubrication—100 flying hours without servicing the valve mechanism. The R-680-D5 engine is rated at 260 H. P. and is used in the Stearman SR-10 airplane.

AVIATION MANUFACTURING CORPORATION

LYCOMING DIVISION
WILLIAMSPORT, PENNSYLVANIA

AVIATION
February, 1938
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WORLD WIDE RECOGNITION *Won in Four Years*

Four years of intensive, conscientious effort to serve the Aviation Industry . . . of steady growth and broadened development . . . of increasing demand for PESCO Pumps and Aircraft Accessories . . . have won universal recognition for PESCO products.

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AVIATION
February, 1955
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Typical engine control system installation using Fafnir Ball Bearings, Rod Ends and Fafnir Ball Crank Ball Bearings. Photo courtesy Mustang Inc. (Right) Mustang Co. also showing Mustang Model A-17A.



WHAT'S "THROTTLED-ITIS"?

The theory that underlies what a pilot with a faulty control system has to keep every engine and in case to keep the work in the same way in a complete job to do it.



THROTTLE-ITIS...AN OLD DISEASE WITH A MODERN CURE

PROBLEM ONE: Multi-engine slip, full load of passengers. Just enough play in throttle mechanism so pilot can't quite eliminate that "when...when...when" arising from unbalanced engine speeds.

PROBLEM TWO: Single-engine slip, weak rubber-mounted main engine vibration wear out plus bearing in clockwise control. Fly makes it almost impossible to control main speed accurately.

SOLUTION TO BOTH: Fafnir Ball Bearings, Rod Ends and Fafnir Ball Bearing Ball Crank Units. Power plant control systems... elements, vibration, drag, control flaps or throttles, and propeller pitch... can be full of play and yet have no binding, accurate to a hair and responsive to the slightest movement... Less wear about these units, which are universal for any engineering, self-aligning to 10°, and easy to install or remove for replacement. Full details on request. The Fafnir Bearing Company, Aircraft Division, New Britain, Conn.

"The Aircraft Bearing Specialists"

FAFNIR BALL BEARINGS

THE BALANCED LINE • • • MOST COMPLETE IN AMERICA

AVIATION
February, 1955
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STANDARD EQUIPMENT on Most American Planes

Nearly every leading American airplane manufacturer makes use of Formica control pulleys in its product—and Formica fairlead bushings as well. These products comply with all the requirements of the Army and Navy specifications and are rigidly and exhaustively tested by the required methods. Formica manufacturing standards are high, the percentage of rejected pulleys is low, and ample manufacturing facilities usually make prompt delivery possible.

The Formica Insulation Co., 4628 Spring Grove Ave., Cincinnati, Ohio

FORMICA

AVIATION
February 1939
128

*We wouldn't have
thought it possible to
improve the world's most
Efficient Airplane, but—*



Cessna engineers are never satisfied!
Feature by feature . . . part by part . . . from nose to tail . . . various sections of the World's Most Efficient Airplane were inspected, tested, analyzed and proved.

Advancements in design, improvements in materials, additional factors of stability and safety, and the new comforts and conveniences — long past the "laboratory stage," were included in

Cessna's New A-I-R-M-A-S-T-E-R

Among the achievements of Cessna engineers the *Airmaster* includes these: Larger useful load, more passenger and baggage space, increased stability in the air, new ground maneuverability, Cessna glide control flap, cleaner lines, redesigned tail assembly, a new engine mounting that reduces vibration without vibration and many other features that put the *Airmaster* "way ahead!"

See it! Fly it!
Let us arrange a demonstration.

CESSNA AIRCRAFT COMPANY
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AVIATION
February 1939
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WARNER

ENGINES

THE
GAUGE
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AIRCRAFT



WARNER AIRCRAFT CORPORATION

DETROIT, MICHIGAN

AVIATION
January 1958



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Regardless of your control
requirements—specify—

HAZARD

Ever since aviation became an industry, Hazard has been preeminent as a supplier of control cable or strand. At first Hazard's bonded and galvanized strand cable was the accepted standard. Now recently Hazard developed "ECR-801688" galvanized cable—made entirely of 18-8 stainless steel. This new cable gained immediate recognition with the Navy and with all holders of civil aviation contracts as well as a problem.

For certainty of performance—for positive control—specify Hazard Aircraft Cable. It is made by the people who are "in business for your safety."

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AVIATION
February 1958



PLEXIGLAS®

U. S. Army Aircraft Multiple Fighter XFM-1
Transparent enclosures of Plexiglas.

RÖHM & HAAS COMPANY, INC.
222 West Washington Square, PHILADELPHIA, PA.

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AVIATION
February, 1948

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NEW!

... the Multi-Frequency Midget
Transmitter for modern planes!

Costs less than single
frequency units ...
but how much more
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Multi-frequency transmission. on private flyer frequencies of 3100, 3120 and 6200 kilocycles—and on any of the 42 air line frequencies for which your plane is licensed.
Simple operation: you shift from one frequency to another using only one hand. There's no complicated remote control apparatus.
Ultra-efficiency: because the antenna circuit is always tuned.
Built-in relay: so you can use either antenna to transmit and receive.
Push button control on micro-

phone controls 2-way communication from push to talk, release to receive.
Crystal controlled, giving in excess of 15 hours with carrier power to enable antenna. Tasting meter shows power actually delivered.
Audio and power unit separate— may be installed in any convenient part of plane.
Weight complete—including power unit and cables— is less than 22 lbs.
Easily installed by the plane manufacturer or your local aircraft service organization.

Complete cables with plugs are supplied with the equipment.

Transmitting either radio telephone or telegraph on any frequency between 2300 and 6900 kilocycles. Western Electric's 25A multi-frequency midget provides everything the private flyer can require.

For details: Western Electric Co., Dept. 114 A, 195 Broadway, New York, U.S.A. or at the Chicago show, Jan. 21-24, 1948—Booths H21, H22.

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AVIATION
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extra provision for —



SELF DEFENSE

is a notable feature of the Vultee V-11GB long range attack bomber. In addition to four fixed guns in the wing and a rear cockpit flexible gun, the Vultee mounts a retractable lower flexible gun covering a field of fire below and to the rear of the airplane. As illustrated, this gun provides excellent rear protection both in the air and against fire from ground troops. No high speed, long range, single-engined attack bomber in the world is so completely equipped for self defense.

VULTEE AIRCRAFT, Division of Aviation Mfg. Corp.
DOWNEY (Los Angeles County), California.



VULTEE "V-11GB" ATTACK BOMBERS



ARE EQUIPPED WITH

"NORMA-HOFFMANN"
PRECISION BEARINGS



"We have the bearings that are built to last — on land or sea and in the air — NORMA-HOFFMANN Precision Bearings are the choice of engineers and designers of planes, engines (including jet-propellers), engine accessories, naval apparatus, automobiles, radio equipment, cameras and loading (and unloading) machines. We're the bearings for the Century. Let our engineers work with you."

Vultee Aircraft (Division Aviation Mfg. Corp.), Downey, Calif., writes:—

"In designing an airplane for expert and use in a foreign country, maximum service with minimum maintenance work assumes a role of increased importance over that of the domestic airplane as replacement parts are seldom obtainable in foreign countries, and it is a lengthy process to obtain such parts from the United States.

"The Vultee V-11GB Attack Bombers are known throughout the world for their performance and dependability, and Vultee Aircraft is pleased to acknowledge the fact that the Norma-Hoffmann Precision Bearings used in the manufacture of these airplanes aid in maintaining this leadership in performance and dependability."

NORMA-HOFFMANN BEARINGS CORPORATION, STAMFORD, CONN., U. S. A.
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Products of the world's foremost builder of precision aircraft instruments, the dependable performance of WESTON Aircraft Instruments has justified their selection by leading transport companies and plane builders of America. A bulletin is available describing the complete line.

Weston Electrical Instrument Corporation,
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The first airplane ever to be catapulted from a Navy carrier was built by Chance Vought. In the ensuing years Voughts have built a reputation among Navy fliers that has become a tradition.

Latest in this long line of high-performance aircraft is the SB2U-1 Scout Bomber, 54 of which have been ordered by the Navy. Powered by a Pratt & Whitney Twin Wasp Junior Engine and equipped with a Hamilton Standard Constant Speed Propeller, the SB2U-1 brings new standards to the Vought tradition.

CHANCE VOGHT AIRCRAFT
DIVISION OF UNITED AIRCRAFT CORPORATION
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STINSON *Reliant*



1. **ORGANIZATION**—A values organization in business successfully for twelve years, has built more 4-6 place cabin planes than all other makers combined. Backed by the combined financial, engineering and manufacturing strength of the Aviatone Manufacturing Corporation.

2. **LEADERSHIP IN DESIGN**—Engineered Stinson engineering has safeguarded life by pioneering as standard features wheel brakes, parking brakes, electric starters, safety glass, hydraulic landing, vacuum brakes, retractable propellers, oil cooled internal compressors and many other features.

3. **RELIABILITY**—Planes fly plain both experienced and beginner

pilots in all parts of the world. Stinson does not compromise on reliability.

4. **SAFETY TO FLY**—Inherent stability, high galled wings, with landing gear, powerful climb, shortness, non-potential landing, low vision, Super 10, controls and ability to land and take off in small places make Stinson easier to fly.

5. **MAINTENANCE CONVENIENCE**—Full knowledge of Stinson's rugged metal construction and its winged reliability record give pilots that great pleasure known as "Peace of Mind."

6. **PERSONAL COMFORT**—A spacious cabin, cushioned seat and comfortable, padded world destination, a campy chair, com-

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Sales Leader by a wide margin in the
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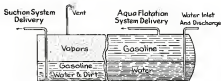
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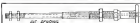
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